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THE RELATIONSHIP BETWEEN THE PHASES OF THE MENSTRUAL CYCLE
AND THE REPORTED TYPE AND SEVERITY OF SYMPTOMS

by

Margaret Grimm Kingsbury

A THESIS

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ABSTRACT

THE RELATIONSHIP BETWEEN THE PHASES OF THE MENSTRUAL CYCLE
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Premenstrual Syndrome affects 15 to 100% of women with varying degrees of severity. A descriptive study of 142, 15-18 year old female adolescents, attending a private parochial midwestern high school, was conducted to determine the relationship between the phases of the menstrual cycle and the type and severity of symptoms reported.

Data were collected by means of a written questionnaire containing 19 symptoms. Severity was measured on a four-point scale across three phases of the menstrual cycle (premenstrual, menstrual remainder).

Differences in severity across cycle phases was computed by the two-tailed t-test. A significant difference in symptom severity between the premenstruum and remainder was found (t = 11.28, $p < .000$). A significant difference in symptom severity between the menstruum and remainder (t = 14.02, $p < .000$) was found. A significant difference was not found between premenstruum and menstruum. This study provides information to help nurses understand the impact of PMS on adolescent girls.

To my mother, Margaret Rachel Burns Grimm, and
in memory of my father, Glen (Mike) Grimm
and
to nurses past, present and future.

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CHAPTER I

THE PROBLEM

Introduction

Premenstrual Syndrome (PMS) is a cluster of physical and psychological symptoms that occur in women in a cyclic pattern any time from ovulation until the onset of menses. The number and severity of symptoms may vary from menses to menses. Premenstrual Syndrome presumably affects to varying degrees from 15% to 100% of women (Woods, et al., 1982). Its symptoms have been acknowledged in literature since the writings of Hippocrates, who attributed premenstrual tension to "the agitated blood of a woman seeking a way to escape from the womb" (Dalton, 1979, p. 4). While recognized for centuries by clinicians, it was not until 1931 that it was first described in the literature by Frank (1931). The first paper in British medical literature was published by Greene and Dalton in 1953. In April of 1981, the Medical News section of the Journal of the American Medical Association stated, "it may be the newest women's health issue in the United States" (Gonzalez, 1981, p. 1393). Reid and Yen (1981) call it "a major clinical entity afflicting a large segment of the female population" (p. 85).

The significance of this syndrome to women can be seen in the statistics which report the percentage of women afflicted, and in the numerous case studies which report the impact of the syndrome on the women, their spouses, children, and all those near to them (Dalton,

1977; Lauersen & Stukane, 1983; Reid & Yen, 1981). The impact of this syndrome on society is seen in reported absenteeism and decrease in work efficiency, increased accidents, lower school exam scores, and increases in psychiatric admission in the time period from ovulation to onset of menses (Dalton, 1977; Reid & Yen, 1981).

While the literature does not report one precisely agreed upon definition of Premenstrual Syndrome, nor an agreed upon effective treatment, many individual physicians and clinics have reported varying levels of success with a great variety of treatments (Abraham, 1983; Budoff, 1983; Dalton, 1977; Harrison, 1984; Lark, 1984; Lauersen & Graves, 1983). Because this syndrome is so multifaceted, the treatment approach is also multifaceted, and is particularly suited to the role of the clinical nurse specialist. The treatment approach which is effective for many women includes education about the syndrome, dietary changes, supplemental vitamins and minerals, exercise, and techniques for stress reduction. Most authors have reported significant reduction in symptoms, excellent results and major improvements using a combined approach (Harrison, 1985; Lark, 1984; Lauersen & Graves, 1983). Lark (1984) reports that women who have been severely affected by PMS (e.g. missing work one week per month, family lives torn apart) were completely healthy and full of energy when she worked closely with them to help them follow this type of regimen. Lauersen (1985) states "with proper explanation and counseling in combination with the natural approach, many patients have found relief from or complete elimination of the

symptoms associated with PMS" (p. 19). Harrison (1985) writes that it is her impression that of the women who go through dietary changes, about half have complete remission of their symptoms and another quarter have improvement to the extent that they are not so much bothered. The clinical nurse specialist in her role as clinician, researcher, and educator can make a significant contribution to eliminating or alleviating the impact of this syndrome.

The appropriate place to begin intervention to eliminate or decrease symptoms of PMS is with the adolescent. Physiologically adolescence is marked by a period of very rapid physical growth, the maturing of the reproductive organs and the development of the secondary sex characteristics. Knowledge of the confusion inherent in this time led Norris and Sullivan (1983) to state, "Teenage girls struggling to grow into their bodies and their emotions are perhaps those who suffer most from premenstrual syndrome" (p. 163). They report a range of physical and psychological problems associated with PMS. The physical problems included an increased incidence of all the symptoms associated with PMS. The psychological problems ranged from mild changes such as increased moodiness and irritability to extreme anger, acting out and antisocial behavior including confrontation with the legal system (Norris & Sullivan, 1983).

Intervention during or prior to adolescence would serve many purposes. Intervention in the form of anticipatory guidance would give the girl a more complete understanding of her body and the

menstrual cycle, and make her aware of her own particular premenstrual pattern. Once the pattern of symptoms was understood and the specific type of PMS identified the girl could begin to look at treatment alternatives. This could begin a lifelong pattern which could diminish or alleviate the symptoms and move the girl toward maximum health potential.

Purpose of this Study

There is agreement in the literature that PMS affects from 15 to 100% of women (Reid & Yen, 1981; Woods, et al., 1980). Thus far there have been no studies which report the incidence among a presumably healthy population of adolescents. The data reported have been collected from adolescents who consulted an adolescent clinic (Widholm, 1967). Data have also been reported on the change in exam scores and work habits of female adolescents at various phases of their menstrual cycle (Dalton, 1960; Dalton, 1968). No studies were found that have asked a general population of adolescents what symptoms they experience. Only with information about the incidence and severity of PMS in a general population of adolescents will nursing have a data base to plan interventions for this age group.

Research Question

Specifically, the questions are: 1) What symptoms are reported by 15 to 18 year olds during the week before their period, during their period and during the rest of the month? 2) How severe are the symptoms in the week before the period, during the period and the rest of the month?

Hypothesis

There is relationship between the phases of the menstrual cycle and the severity of symptoms reported.

Definition of Concepts

Premenstrual Syndrome Symptoms

Although PMS has been discussed in the literature for over 50 years, there is lack of agreement on definition. Dalton (1977) defines it as a "wide variety of symptoms which regularly occur in the same phase of each menstrual cycle, followed by a symptom free phase in each cycle" (p. 3). In selecting this definition she acknowledged the limitations, and stressed the importance of the cyclic nature of the symptoms and the symptom free period in the diagnosis of this syndrome.

Abraham (1983) prefers to use the term Premenstrual Tension Syndrome (PMTS). He defines it as, "a symptom complex occurring during the luteal phase of the menstrual cycle, becoming progressively worse, interfering with familial, social and work

related activities, and improving after the onset of menses" (Abraham, 1983, p. 447). He also mentions the absence of or decrease in symptoms following the onset of menses. Additionally, his definition includes the impact of the syndrome on three areas of activity; family, social, and work related activity.

A definition which includes the broad range of symptoms and a time frame is utilized by Budoff (1983). She prefers the term PMTS and states this "signifies the broad range of psychologic, neurologic, mammary, gastrointestinal, renal, dermatologic, and musculoskeletal symptoms that afflict women in the week to ten days before the onset of menses" (Budoff, 1983, p. 469).

The multifaceted nature of this syndrome has not lended itself to ease of definition, but the majority of definitions do have some characteristics in common. These include the cyclic nature of the occurrence of symptoms and a symptom free phase. For the purpose of this study, Premenstrual Syndrome will be defined as a cluster of physical and psychological symptoms that occur any time from ovulation to the onset of menses, followed by a symptom free phase.

Numerous hypotheses have been formulated to explain PMS, but a cohesive pathophysiologic formulation has yet to be established. The estrogen excess-progesterone deficiency theory was first postulated by Frank (1931) and has several supporters, including Dalton (1983). To date, this has not been supported by double blind controlled trials. Other hypotheses suggest deficiencies of vitamins including A and B-6 (Abraham, 1980; Reid & Yen, 1981). Other hypothesized

etiology include hypoglycemia, endogenous hormone allergy and psychogenic disorder (Reid & Yen, 1981). Fluid retention was and continues to be viewed as a possible causative factor (Reid & Yen, 1981). However, some researchers believe that fluid retention is only one manifestation of an underlying neuroendocrine disorder.

The idea of a dysfunction of the neurointermediate lobe is supported by Reid and Yen (1981). They postulate that "an aberrant release of, or sensitivity to the neurointermediate lobe peptides α -MSH and B-endorphins during the luteal phase may be the central event which triggers a cascade of neuroendocrine changes, leading ultimately to the varied manifestations of PMS" (Reid & Yen, 1981, p. 96).

Severity

Severity will be measured by a four-point scale defined by Abraham (1983). Zero = none; 1 = mild (symptom present but does not interfere with activities); 2 = moderate (symptom present and interferes with familial, social and school or work related activities but is not disabling); and 3 = severe (symptoms are disabling with marked decrease in performance and inability to function).

Adolescence

Adolescence is the period of transition between childhood and adulthood extending roughly from ages 12 to 20 (Gander & Gardiner, 1981; Hilgard, Atkinson & Atkinson, 1979). The physiological landmarks of this time period include a period of very rapid growth,

maturing of the reproductive organs and accompanying secondary sex characteristics. For girls, this period is marked by the onset of menses, breast development and the growth of pubic hair. The age of menarche varies widely from 11 to 17, the average age being 12 years, 5 months (Zacharias, Rand & Wurtman, 1976).

The psychosocial or developmental tasks of this period have been described in various ways. Erikson (1968) describes the crisis as identity versus role confusion. The important questions which need to be answered are "Who am I?" and "Where am I going?" Havighurst (1972) identifies eight developmental tasks. Those relevant to this study include:

1. Accepting ones own physique and using the body effectively;
2. Achieving a masculine or feminine social role; and
3. Achieving emotional independence of parents and other adults.

The task of accepting ones body can be further complicated for a girl experiencing PMS. The physical discomforts accompanied by the emotional lability and fear of loss of control can contribute to the confusion of this age period.

Study Variables

Phases of the Menstrual Cycle.

The three phases of the menstrual cycle will be defined as the week before the period begins, during the period and the remainder of the month.

Symptoms of Premenstrual Syndrome.

The symptoms attributed to Premenstrual Syndrome are numerous. They have been delineated and grouped in various categories by individual researchers. Abraham (1980) uses four subgroups designated as PMT-A, PMT-H, PMT-C and PMT-D. The 19 items in Abraham's Menstrual Symptom Questionnaire (MSQ) are the dependent variables for this study (Abraham, 1983) (see Appendix D).

Extraneous Variables

Data that might influence the MSQ are collected and classified as extraneous variables. Age, health and menstrual history items are included.

Limitations of the Study

1. A modification of Abraham's Menstrual Symptomatology Questionnaire (MSQ) will be used. Because this is one time retrospective method of data collection, the tendency may be to over-report symptoms. However, it has been found that concordance is greatest in patients with the most severe symptoms (Rose & Abplanalp, 1983). Further, Moos (1968) and Rouse (1978) found that when a retrospectively administered questionnaire was completed by women at different phases of the menstrual cycle regarding scores for their most recent cycle, there was no phase effect on scores obtained.

2. This study is a volunteer sample. Those who agreed to participate may be different than those who refused. Therefore, it is possible the research findings are not applicable to all 15 to 18 year old girls.
3. This study was conducted at a private parochial school and the majority of subjects were white, upper middle class. Therefore, the results of the findings may not be applicable to a population with different sociodemographic characteristics.

Assumptions of the Study

1. It is assumed that the subject will understand the terminology.
2. It is assumed that the subjects are able to and will honestly report their symptoms.
3. It is assumed that the instrument accurately measures symptoms of Premenstrual Syndrome because it was developed for that purpose by Abraham (1983). Additionally, the 19 symptoms have been included in instruments used by other researchers (Moos, 1968; Woods, 1980).

Overview of Chapters

This study is presented in six chapters. In Chapter I are the introduction, purpose statement of the problem, research question, definitions of variables, assumptions, limitations of the study and overview of the thesis. The conceptual framework is included in Chapter II. In this chapter the concepts are defined and developed

and the conceptual model is presented. In Chapter III is the review of relevant literature. The research design and methodology are included in Chapter IV. Data analysis and results are contained in Chapter V. In Chapter VI is the concluding chapter and contains the summary of research findings, conclusions, recommendations and nursing implications.

CHAPTER II

CONCEPTUAL FRAMEWORK

Introduction

In this chapter the conceptual framework for this study will be described and discussed. Martha Rogers' theoretical basis of nursing was used as the foundation for this framework. Concepts discussed will include Man, adolescence as a phase in the life cycle of man, health, PMS and nursing. The problem of PMS and the implications of this study for nursing practice will be presented. The nursing role in helping the adolescent with PMS will be described based on Roger's theory in the context of the nursing process.

Rogers Theory

Unitary Man (Human Being)

Rogers views nursing from a global perspective. The broad scope of her theory makes it universally applicable to nursing practice. The basic components of her theory are the assumptions about human beings, beliefs about nursing and the four concepts which are the building blocks of the conceptual system. Rogers bases her theory on her assumptions about human beings because she believes they are the focus of nursing. The human being is defined as a unified whole. She further defines humans by stating five assumptions about them. They are:

1. The human beings are a unified whole, possessing their own integrity and manifesting characteristics that are more than and different from the sum of their parts.
2. Human beings and the environment are constantly exchanging energy.
3. The life process evolves irreversibly and unidirectionally along the space time continuum.
4. Pattern and organization identify the person and reflect their innovative wholeness.
5. Human beings are characterized by the capacity for abstraction and imagery, language and thought, sensation and emotion (Rogers, 1983, p. 47).

These assumptions about human beings are the basis for a conceptual system which guides the nurse in practice.

The environment is defined as anything outside the individual's energy field extending to infinity. The environment includes concrete phenomena such as food, medication, other people, and the abstract phenomena including quality of relationships, information and societal values. Each phenomena is seen as potentially impacting or being impacted by the person.

Man is identified by pattern and organization and as they move through life the pattern is changed by interaction with the environment. Man's ability to think and make decisions allows choices in selecting some of the components of the environment. It is in these choices that a person can influence their pattern and

repattern so life is experienced as harmonious rather than discordant (Rogers, 1983). The variety of choices available and their potential impact has important implications for this study. Implication being that knowledge about PMS, type of symptoms and factors that influence them, will allow the woman to make changes in an effort to reach her maximum health potential.

Middle Adolescence

Adolescence is a stage in the life cycle of man. It is a period of maturing physically, emotionally and cognitively. Developmental psychologists have divided the period, extending from approximately 12 to 21, into three phases; early adolescence, middle adolescence and late adolescence (Blos, 1962; Erikson, 1963; Kaluger & Kaluger, 1979).

While psychologists have acknowledged that development precedes at a varying pace for each individual, they have arbitrarily selected 12 to 14 as the period of early adolescence, 15 to 18 as middle adolescence and 19 to 21 as late adolescence (Blos, 1962; Kaluger & Kaluger, 1979). The population selected for this study is the middle adolescent girl. The physiological changes, developmental tasks and cognitive tasks of this group will be discussed.

The physical growth and development which was rapid in early adolescence gradually lessens in the middle adolescent. Increases in height and weight are less noticeable; breasts and hips have taken an adult proportion and adult hair distribution is present. The primary

sex organs, which lag a year or two behind secondary sex characteristics, usually reach full maturity during this time. Girls of this age usually ovulate and have established regular menstrual cycles (Allen-Lia, 1981; Gander & Gardiner, 1981; Kaluger & Kaluger, 1979).

The developmental tasks of this age group are basically an extension of early adolescence. Erikson (1968) has described the task of this age group as answering the question, "Who am I"? The normative crisis is one of "Identity versus Role Confusion." Erikson (1968) acknowledges difficulty in defining identity but discusses it with the following statements: "So far I have tried out the term identity almost deliberately - I like to think on many different correlations. At one time it seemed to refer to a conscious sense of individual uniqueness, at another to an unconscious striving for a continuity of experience and at a third as a solidarity with a group ideals" (p. 208). When identity is achieved it is experienced as psychosocial well-being and this well-being is arrived at through exploration of alternatives. The question, "Who am I" is asked in regard to sexual self, peer relationship, career choices and broadly regarding my place in the world. The successful resolution of this normative crises may follow a period of great turbulence and exploration of what appear to be antisocial options, particularly in the eyes of parents or other adults. Failure to resolve these crises results in role confusion and lack of adequate psychosocial self-definition (Erikson, 1968).

Havighurst (1972) has identified eight developmental tasks of this period. Those most relevant to this study are:

1. Accepting ones own physique and using the body effectively;
2. Achieving a masculine or feminine social role; and
3. Achieving emotional independence of parents and other adults.

For the adolescent girl, the task of accepting her physique and using her body more effectively includes achieving comfort with the monthly menstrual cycle. Emotional or physical discomfort caused by PMS can further complicate and prolong this task. The acceptance of one's self as a woman who will menstruate every month for the next 40 years can be viewed with apprehension or dread when the premenstrual period is one of discomfort or disharmony. As the middle adolescent girl moves toward increasing independence, the choices made about life-style or environmental components are less under the influence of parents and other authority figures and more the choice of the adolescent. Information about the impact of these choices can help the adolescent move toward the potential establishment of patterns which will decrease the discomfort of the premenstrual experience and contribute to achieving the maximum health potential (Allen-Lia, 1981; Gander & Gardiner, 1981).

Along with the physical and emotional transformations, adolescents also experience changes in their intellectual capacities. This stage of cognitive development has been described by Piaget and Inhelder (1969), as the stage of "formal operations."

This period begins around age 11 or 12 and stabilizes at 14 or 15, the beginning of middle adolescence. Adolescents who have reached formal operations are able to generate hypotheses, reach logical conclusions and systematically solve problems whether they are presented in concrete or abstract form (Piaget & Inhelder, 1969). As a result of these changes, adolescents are more able to look at the future and consider alternative solutions to complex problems.

The stabilization of physical development, the developmental tasks of this age, and the increase in cognitive skills, provide the individuals of these ages with the ability to function more independently and make choices which can have a positive impact on their lives. Developmental theory supports the opinion that this is potentially a time of great discord, the discord coming from both internal and external environmental components (Blos, 1962; Gander & Gardiner, 1981; Kaluger & Kaluger, 1979).

Health

Rogers uses the word health frequently but does not presume to offer a definition. Her belief in the importance of health as a goal is seen in her statements, "Maintenance and promotion of health are a nation's first line of defense in building a healthy society" (Rogers, 1970, p. 122). She views health and illness as a continuum which can only be understood in terms of the life process.

The health goal, implicit in this study of adolescent girls perception of their symptoms during phases of the menstrual cycle, is adequately described by Rogers (1970). The nursing goal for this study is to assist the adolescent girl to achieve her maximum health potential. For the girl experiencing PMS, the goal would be to alter the environment to decrease or eliminate symptoms of PMS and bring harmony to the menstrual experience. The maximum health potential will be unique to each individual and will be defined by her.

In assisting the girl to achieve her maximum health potential, the nurse will assess the level of disharmony in the girls premenstrual experience and identify the client-environment interactions which are contributing to this. With this knowledge, the nurse will assist the girl in repatterning to promote a symphonic interaction which increases the harmony of the premenstrual experience. Health for this client, in this specific phase of the life cycle, will be achieved when she is able to report attainment of a satisfactory decrease or elimination of symptoms during the premenstrual phase.

PMS

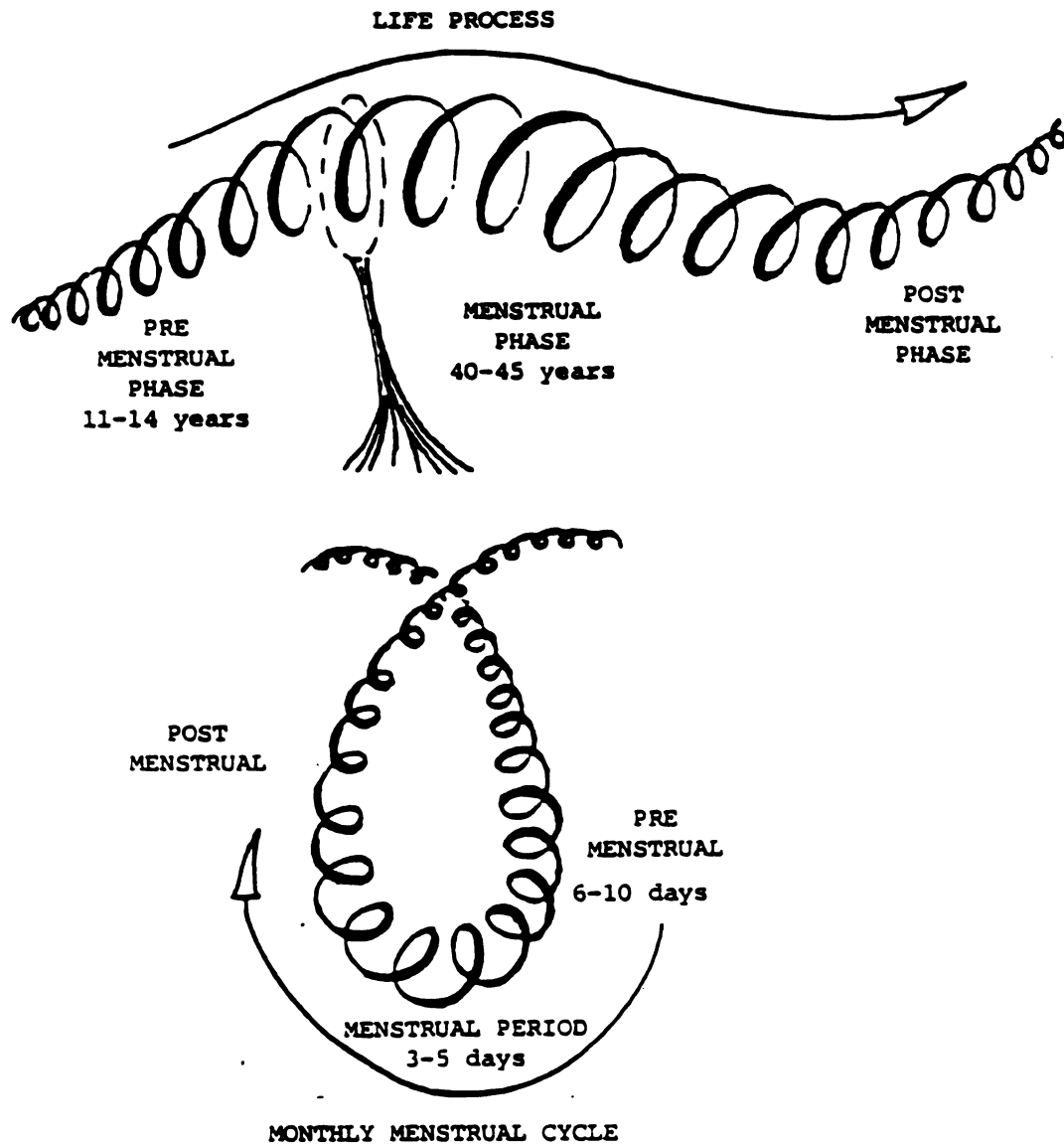
PMS is a variation in the pattern of the menstrual cycle. To understand PMS, it must be placed within the context of the woman's menstrual experience. The menstrual cycle is a stage or pattern in the life process of the woman. From this perspective the woman can be viewed as having three distinct stages or patterns in her life.

The premenstrual stage (from birth to approximately 12), the menstrual stage (12 to approximately 52) and the postmenstrual or menopausal stage (52 to end of life). Within the middle stage is a smaller pattern, the monthly menstrual cycle. This cycle also has three patterns; premenstrual, menstrual and postmenstrual. The menstrual could be conceptualized as a pattern within a pattern (see Figure 1).

The onset of menses is a landmark in the woman's life process. It signals a biological step toward maturity. The meaning of this event to the adolescent girl and her feelings about it are influenced by her family (especially her mother), her peers and society in general. All of these are environmental components in the girls' life process (Dalton, 1983; Weideger, 1975). Throughout history societies' attitudes about menstruation have been primarily negative. The dominant sex has been male and they have viewed menstruation with fear, distrust and distaste. The strength of men's feelings has resulted in a variety of menstrual taboos, many of which have isolated the menstruating woman from the rest of her group. Many of these taboos were based on fears that the menstruating woman has special powers which could inflict damage (Dalton, 1983, Lauersen & Stukane, 1983; Weideger, 1975).

The negative attitudes and isolation of the menstruating woman as well as the implications that the menstrual cycle made a woman less competent than her male counterparts have had several significant effects on women and their handling of the menstrual cycle. This has only begun to change with the advent of the women's movement in the

Figure 1: Womans' Life Cycle



late 1960's. Prior to this, women dealt with menstruation by keeping it a secret, especially from men. Additionally, they were reluctant to mention any menstrual problems to their physicians, often due to previously unhelpful patronizing responses such as a pat on the head and a prescription for Valium (Boston Women's Health Collective, 1984; Harrison, 1982; Lauersen & Stukane, 1983; Norris, 1983; Weideger, 1975).

It is no wonder with this response from physicians that PMS did not receive the attention deserved until as recently as 1979. Since the late 1970's, articles on PMS have begun appearing in reputable medical journals and research is progressing on this problem (Abraham, 1980; 1983; Abplanalp, 1983; Labrum, 1983; Reid & Yen, 1981).

PMS is a variation in the pattern of the menstrual cycle. As such, the experience is unique to each woman. While the exact variation is unique to each woman, there are many common elements which are shared. The factors which make it unique include the type, severity, and length of duration of symptoms experienced. Additionally, the perception of the experience is different from woman to woman. Many view it as a negative experience and report uncomfortable symptoms including headaches, irritability, and feelings of loss of control. However, other women report it as a time of heightened awareness, increased creativity and feelings of general well-being (Abraham, 1983; Dalton, 1983; Harrison, 1984; Lark, 1984; Weideger, 1975). Many factors influence this

perception. These factors include type and severity of symptoms, society's attitudes about woman and menstruation and the woman's own feelings about herself and her femininity (Clarke & Ruble, 1978; Dalton, 1983; Harrison, 1984; Weideger, 1975; Woods, 1985).

PMS is a cluster of physical and psychological symptoms that occur any time from ovulation to the onset of menses followed by a symptom free phase. The etiology has not been determined but researchers have postulated multiple etiologies and suggested several areas for further investigation.

Several clinicians have developed treatment regimens which have produced good results with their clients. The treatment modalities common to each of the authors include: nutrition including supplementation with vitamins and minerals, exercise, stress reduction, rest and, in some cases, herbs, acupressure, massage and yoga. These treatment regimens are based on symptoms and individualized for each client (Abraham, 1983; Harrison, 1984; Lark, 1984; Lauersen, 1985; Norris, 1983).

In viewing the woman experiencing PMS from the perspective of Rogers' frameworks, direction is provided for nursing intervention. The woman has the capacity to knowingly rearrange her environment and exercise choices to repattern herself into more harmonious pattern.

Nursing

Rogers (1983) defines nursing as, "a humanistic science dedicated to compassionate concern for maintaining and promoting health, preventing illness and caring for and rehabilitating the sick and disabled" (p. vii). The focus of nursing is man, and the goal of the professional nurse is to promote symphonic interaction between man and environment, to strengthen the coherence and integrity of the human field and to direct and redirect patterning of the human and environmental fields for realization of maximum health potential (Rogers, 1983). The tool which the nurse uses to achieve this is the nursing process.

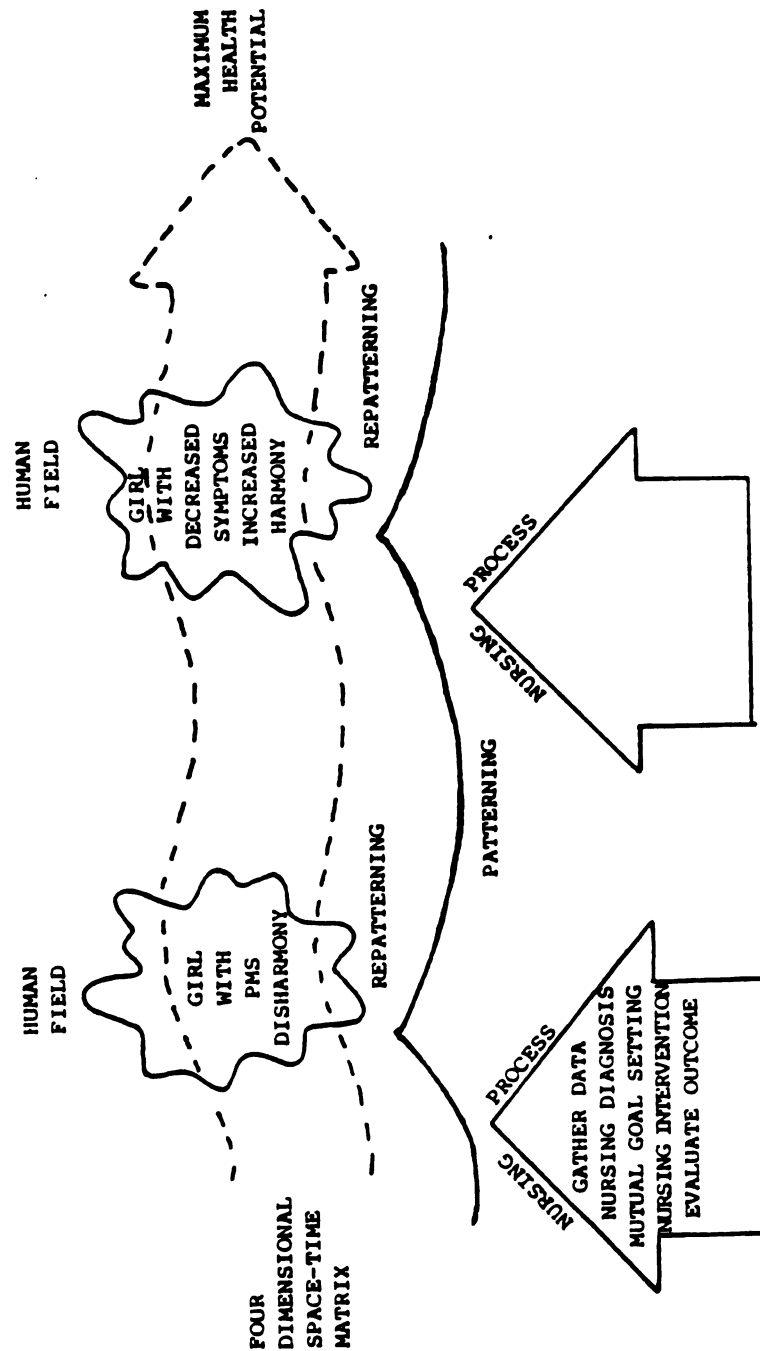
The four building blocks of Rogers conceptual system are: 1) energy fields; 2) universe of open systems; 3) pattern and organization; and 4) four dimensionality. Energy field is the fundamental unit of the living and the non-living. This field is unified, dynamic in nature and extends to infinity. Rogers' conceptual system is concerned with two energy fields: 1) the human field and 2) the environmental field. The energy field is the essence of the person and can only be viewed as a whole. The environment is defined as a four dimensional negentropic field identified by pattern and organization and encompassing all that is outside any given human field. A four dimensional domain is without spatial or temporal attributes.

The universe of open systems is understood because the energy fields extend to infinity. These fields are continuously open and, thus, have a continuing impact on each other and are continuously changing. These fields are identified by pattern and organization and postulated to be four dimensional. "Four dimensionality is defined as a non-linear domain without spacial or temporal attributes. The real world is postulated to be four dimensional. The present as a point in time has no place in this paradigm. Rather the four dimensional human field is the 'relative present' or 'infinite now' for any individual" (Rogers, 1980, p. 84).

Rogers conceptual system is particularly applicable for the nurse working with clients who have PMS. The client with PMS is the unitary man of Rogers' system. As such, she is an energy field which is open to impact by the environment. The environment in this case is all that is external to the woman's energy field including the nurse.

The woman, as a thinking being with the ability to make choices and select goals, will benefit from nursing intervention to help her make changes to diminish or alleviate the symptoms of PMS. The nurse, through the use of the nursing process, provides the woman with the information she needs to change her environment so that it has a more harmonious impact on her life (Figure 2).

Figure 2: Rogers' Man-Environment Interaction



Adapted from: MSU College of Nursing, NE570 Course Syllabi. Barbara Given, Professor.

Nursing Process

"Nursing exists to serve people" (Rogers, 1983, p. 84). The specific person of concern to this study is the woman client experiencing PMS. The link between this client and the nurse is the nursing process. This is the tool the nurse uses to operationalize Rogers' concepts and provide the service which moves the client toward the goal of achieving maximum health potential. The steps of the nursing process are: 1) gathering data; 2) evaluating data (developing nursing diagnosis); 3) determining immediate and long range health goals with the client; 4) initiating intervention; and 5) evaluating the effectiveness of interventions. Successful utilization of this process requires the involvement of the nurse and client.

The first step in the nursing process is gathering data. For the client experiencing PMS, several types of data would be gathered. First, a three month record of time of occurrence, type, and severity of symptoms experienced utilizing Abraham's grouping. This information would aid in identification of the pattern. Second, a record of all relevant environmental factors including diet, medication, alcohol intake, type and frequency of exercise, stressors, and life situation. Additional relevant data would include a health history.

The second step is the nursing diagnosis. The nursing diagnosis is a conclusion about the client based on the data gathered. The diagnosis will seek to identify the variation in premenstrual pattern

specific to the client and the environmental factors which may have an impact on this pattern. The purpose of the nursing diagnosis is to provide for planning and implementing nursing intervention (Falco & Lobo, 1980, p. 174).

The third step of the nursing process is determining immediate and long-term goals. Rogers (1983) emphasizes that mutual participation in the goal setting process is a significant factor in their achievement. The specific goals would depend on the values of the client at a particular point in space-time. Goals set by the woman experiencing PMS might include:

1. To identify the pattern of symptoms in relationship to the menstrual cycle.
2. To identify the type of PMS.
3. To identify environmental factors which probably impact symptoms.
4. To make environmental changes to alleviate symptoms.
5. To seek means of changing attitude to view experience in a more positive light.
6. To seek peer support by joining PMS self-help group.

Nursing intervention is the fourth step of the nursing process. Interventions are the actions taken to achieve the goals stated in step three. Rogers (1983) states, "Nursing intervention is directed toward repatterning of man and environment for more effective fulfillment of life capabilities. Life capabilities encompass man's humanness, his creative promise, his capacity to feel and reason, the

symphonic potential of his tangible structure and functioning" (p. 127). The interventions selected will depend on the problems identified and the mutual goals set by the client and the nurse.

The last step of the nursing process is evaluation. Some very simple methods could be used to evaluate the effectiveness of interventions. The client could keep a record of interventions utilized and symptoms experienced. This record could be reviewed at regular intervals and interventions reformulated to move toward maximum health potential. Rogers (1983) believes that the dynamic nature of life calls for a continuous revision of the nature and meaning of diagnostic measures and concomitant revision of interventional measures.

Summary

In Rogers' framework man is identified as the focus of nursing. The framework describes man, his relationship to his environment, and the importance of this interaction to the achievement of maximum health potential. The goals of nursing are clearly stated and the nursing process is the tool the nurse employs to assist man in achieving these goals. The nurse, helping the client experiencing PMS, gathers data about this experience. Nursing diagnoses are formulated and immediate and long-term goals are set by the client and nurse. Interventions are selected to repattern the individual and the environment for more effective fulfillment of the

individual's life capabilities. The final step is evaluation. Evaluation may include formulation of interventions to reach goals not yet achieved.

In the next chapter the review of literature relevant to this study is presented. Included will be a review of the historic and current literature on PMS. Additionally, literature which contributes to an understanding of the adolescent girl will be reviewed.

CHAPTER III

LITERATURE REVIEW

Introduction

The scope of this review will include the historically important literature that has contributed to knowledge about PMS and a review of the research particularly relevant to this study. Special emphasis will be placed on studies which have cited the incidence and impact of PMS on a variety of populations. Additionally, studies in which the diversity of symptoms have been reported will be reviewed. Literature contributing to the understanding of the adolescent girl will be included.

Included in this chapter is a review of research studies, books and papers relevant to Premenstrual Syndrome. The scope of this review will include the characteristics of PMS as described by various authors, the incidence and impact, postulated etiology and suggested treatments.

Premenstrual Syndrome

In the literature, Premenstrual Syndrome is described as exactly that, a syndrome, not a well understood disease entity. It is known by its symptoms rather than by a well documented pathology. This lack of confirmed pathology has made it difficult for experts to agree on a definition of PMS. An extensive review of the literature reveals some areas of agreement. There is agreement that there is a

cyclic occurrence of symptoms and the presence of a symptom free or diminished symptom phase (Abraham, 1980; Dalton, 1977; Dunlay, 1980; Lark, 1984; Lauresen & Graves, 1983; London, et al., 1983; Norris, 1983; Reid & Yen, 1981; Rose & Abplanalp, 1983; Rubinow & Roy-Byrne, 1984).

Historical Background

The early literature on PMS will be discussed in this section beginning with Franks article in 1931. The discussion will cover the identification of symptoms which are part of the syndrome, postulated etiology and treatment. Current literature will be reviewed in greater depth in the following section.

Premenstrual Syndrome (PMS) or premenstrual tension has been recognized by clinicians for centuries and referred to in literature from the days of Hippocrates (Dalton, 1979), but it was not until 1931 that the syndrome was described by Frank (1931). Frank described a condition characterized by premenstrual nervous tension usually associated with weight gain; edema of the face, lower abdomen and extremities; and headache. In his population of 15, he found the symptoms began seven to ten days prior to menstruation and usually terminated within hours of the onset of menstruation. Using a bioassay for estrogens, Frank (1931) reported an increase of estrogens in the blood and a decrease in the urine. He postulated that PMS was caused by an excess of peripheral estrogen due to decreased renal clearance (Frank, 1931).

In a 1934 study of 42 student nurses, Sweeney (1934) reported that 30% gained more than three pounds premenstrually, and complained of swelling of extremities; abdominal bloating, sometimes associated with increased thirst and decreased urine output. She postulated that a disorder of the sympathetic nervous system was responsible for the premenstrual edema and disagreed with the idea of intrinsic renal pathology (Sweeney, 1934).

Israel (1938) reported on a patient with premenstrual irritability, tension, insomnia and nymphomania. He reported that estrogen worsened the symptoms and progesterone improved them. This patient was cured by ovarian and pituitary irradiation. Seven more patients showed a favorable response to progesterone treatment. He proposed that PMS was due to progesterone deficiency and unopposed estrogens.

In 1943, the theory of nutritional deficiency in vitamin B was suggested by Biskind as a cause of PMS. He postulated that the symptoms were caused by excess estrogens due to decreased liver clearance resulting from vitamin B deficiency. He was able to produce estrogen excess in rats by giving them a vitamin B deficient diet. He later revised his theory and attributed the symptomatology to an estrogen/androgen imbalance in favor of estrogens (Biskind, 1943).

In 1947, Billig and Spaulding described the symptoms of PMS as irritability, anxiety, headaches, increased appetite, lowered pain threshold, and easy bruising. The 14 patients in this study also

showed an increased carbohydrate tolerance in a three hour glucose tolerance test. They postulated that PMS was caused by hyperinsulinism secondary to adrenal insufficiency. They treated patients with adrenal extract and a carbohydrate free diet. They also emphasized the social implications of this syndrome and stated the patients reported serious domestic difficulties and felt they were hard to live with (Billig & Spaulding, 1947).

In 1949, Stieglitz and Kimble described the following symptoms of premenstrual discomfort in a population of 67; irritability (68%), breast engorgement (65%), headache (50%), backache (47%) and depression (36%). They postulated endometrial toxins as the cause and reported a 91% success rate in women treated with ammonium nitrate (Stieglitz & Kimble, 1949).

In 1953, Greene and Dalton published their first report on PMS. They reported on 84 cases seen in their clinical practice over a four year period from 1948 to 1952. A definition of PMS was not included but symptoms of PMS were reported. In the 84 cases, they found 52% of the patients presenting with headache as their most serious symptom. Green and Dalton (1953) added nausea, rheumatism, skin disorders, rhinorrhea, asthma and epilepsy to the symptoms already mentioned by other authors. They reported that the severity of PMS increased with age and childbirth. Symptomatology was attributed to unopposed estrogen and excellent results were reported for treatment with synthetic and natural progesterones (Greene & Dalton, 1953).

In the same year Morton, Additon, Addison, Hunt & Sullivan (1953), published a series of papers on the incidence, etiology and social impact of PMS. Their subjects were a population of women in prison. They found the incidence increased with a 51% incidence when the average age was 32.4 years and a 31% incidence when the average age was 21.4 years of age. The symptoms reported most often were nervous and emotional instability (84%), lower abdominal pain (70%), nervousness (55%), abdominal bloating (50%), fatigue and exhaustion (40%), and headaches (59%). Forty-eight percent of this population also reported menstrual disturbances. In patients complaining of premenstrual increased appetite (23%), craving for sweets (37%), weakness and faintness (27%), he reported an increased carbohydrate tolerance. When treated with a high protein, low-sugar, low-salt diet and vitamin B-complex supplements, 79% of the women improved significantly. The productivity of the women increased by 33% and improved behavior was reported by the warden (Morton, et al., 1953).

In 1953, Rees (1953) reported on 30 PMS patients from his clinical practice. He found the incidence and severity of PMS increased with age and childbirth. His treatment approach included psychotherapy, diuresis and hormonal therapy with progestins and androgens. Rees found psychotherapy alone to be ineffective. Diuresis was effective in preventing or decreasing edema of the face, extremities, abdominal bloating, breast tenderness and weight gain, however, this had no impact on nervous tension, irritability, anxiety and depression. Hormonal therapy was found to be the most effective

treatment. Rees supported the unopposed estrogen theory and postulated that androgens and progestins neutralized the relative excess of endogenous estrogens.

In 1954, Mukherjee screened 1,850 gynecologic outpatients for PMS symptomology using strict criteria for number and severity of symptoms he found an incidence of 32%. The most common symptom reported was headache (81%), followed by nervous tension (77%) usually accompanied by irritability, mood swings and depression. Symptoms of excess water retention were found in 66% and mastalgia in 60%. Mukherjee also reported a group of 24 patients complaining of increased appetite, craving for sweets, fatigue and dizziness. He performed a two-hour glucose tolerance test on this group and a control group during the follicular and luteal phases of the cycle. A normal GTT curve was found in both phases for the control group but flat response, indicating an increased glucose tolerance during the luteal phase for the PMS patients. In 25 PMS patients with premenstrual weight gain, he found an increased extra cellular fluid volume proportional to the increased body weight. Mukherjee reported most patients responded favorably to salt depletion and progesterone therapy.

The list of symptoms which comprise this syndrome has been extensively reported and there is general agreement that a diversity of symptoms may be considered components of this syndrome if there is a cycle phase variation in their occurrence. Investigators have reported lists of symptoms ranging from 10 (Frank, 1931), to 96

(Halbriech, et al., 1982). Postulated etiologies include estrogen excess-progesterone deficiency (Frank, 1931; Greene & Dalton, 1953; Israel, 1938), vitamin B deficiency (Biskind, 1943) and hypoglycemia (Billig & Spaulding, 1947; Morton, et al., 1953).

For nearly 25 years, Dalton's (1964) theory of spasmodic and congestive dysmenorrhea has influenced menstrual cycle research; and the diagnosis and treatment of PMS in clinical practice. Her work is a pioneering effort in this field and the volume of her practice has provided extensive information. Although she has had a profound influence, there has been little empirical testing of her theory. The support for her theory seems to be based on her reported success in treating PMS with progesterone (Woods, et al., 1980).

Dalton (1964) proposed that premenstrual and menstrual distress were two discrete phenomena. Menstrual distress or spasmodic dysmenorrhea occurred at the time of menstruation. The discomfort from this type of dysmenorrhea usually followed the uterine and ovarian nerve distribution causing a spasmodic type pain in the suprapubic, back and thigh areas. This type of dysmenorrhea usually begins about two years after menarche and occurred only with ovulatory cycles. Spasmodic dysmenorrhea improved with age, pregnancy and use of the birth control pill (Dalton, 1964; 1977).

Dalton (1977) called Premenstrual Syndrome congestive dysmenorrhea. She reported that PMS occurred primarily prior to the onset of menstrual flow and identified three common patterns of the timing of symptoms. Women experiencing "Pattern A" reported symptoms

during the late premenstrual; "Pattern B" women reported symptoms occurring at ovulation, resolving spontaneously within a day or two and reappearing during the premenstruum. Women with "Pattern C" reported symptoms beginning at ovulation which gradually increased in severity during the entire luteal phase. Termination of symptoms might occur abruptly with the onset of menstrual flow or even a day earlier or gradually during menstruation. The discomfort associated with PMS occurred in the lower abdomen, back and breasts often accompanied by generalized joint pains and headache. Dalton (1977) reported PMS worsened with age, childbirth and the birth control pill.

Dalton (1977) stated, "the diagnosis of PMS depends on the time relationship of symptoms to menstruation not on specific symptoms" (p. 6). She found the symptoms of PMS to be very diverse but found the most commonly reported symptoms fell into seven categories (see Figure 3). In an early report on the analysis of case histories of 84 patients from their clinical practice, Greene and Dalton (1953) reported on the frequency of occurrence of the most commonly reported symptoms (see Table 1). Dalton has not reported any further data regarding type or frequency of symptoms.

In a study of 217 girls (ages 11-17) attending a British boarding school, Dalton (1960) reported on the correlation between weekly grades and the phases of the menstrual cycle over a 12-week term. In an analysis of this data, Dalton found that during the premenstrual week 27% had a drop in school grades compared to the previous week.

Figure 3: Common Symptoms and Categories of the Premenstrual Syndrome

<u>Categories</u>	<u>Symptoms</u>
Psychological	Tension Depression Irritability Lethargy
Neurological	Migraine Epilepsy Syncope
Dermatological	Acne Herpes Urticaria
Respiratory	Asthma Rhinitis
Orthopaedic	Joint pains Backache
Ophtalmological	Glaucoma Conjunctivitis Styes
Otolaryngorhinological	Sinusitis Sore throats

Adapted from: Dalton, K. (1977). The premenstrual syndrome and progesterone therapy. Chicago: Year Book Medical Publishers, Inc.

Table 1: Frequency and Percent Symptoms of Premenstrual Syndrome
Reported by Clinical Patients

Symptom	Presenting		Other		Total	
Headache	53	63.1%	5	6.0%	58	69.5%
Nausea	2	2.4%	23	27.4%	25	29.7%
Irritability	2	2.4%	3	3.6%	5	6.0%
Depression	1	1.2%	4	4.8%	5	6.0%
Lethargy	--	--	11	13.1%	11	13.1%
Vertigo	1	1.2%	8	9.5%	9	10.6%
"Rheumatism"	5	6.0%	9	10.6%	14	16.7%
Skin and mucosal						
lesions	9	10.6%	2	2.4%	11	13.1%
Oedema	1	1.2%	4	4.8%	5	6.0%
Rhinorrhoea	3	3.6%	3	3.6%	6	7.2%
Asthma	4	4.8%	--	--	4	4.8%
Epilepsy, petit mal	3	3.6%	1	1.2%	5	6.0%
Epilepsy, grand mal	--	--	1	1.2%		
Mastalgia	--	--	2	2.4%	2	2.4%

n = 84

Adapted from: Green, R., & Dalton, K. (1953). The Premenstrual Syndrome. British Medical Journal, 1007-1014.

Twenty-five percent of the subjects had a drop in grades during the menstrual week. In contrast, 17% had a rise in grades during the premenstrual week and 21% during the menstrual. Thirty percent of the subjects had a rise in grades during the postmenstrual week. Further analysis revealed that the pattern of premenstrual fall in grades and postmenstrual rise was equally distributed among all age groups. Dalton (1968) has postulated that this pattern of drop in grades during the premenstruum and menstruum and rise in grades in the postmenstruum is because the girls have PMS.

In a study in a woman's prison, Dalton (1977) reported on the correlation between the phase of the menstrual cycle and the date of the crime. She also reported an incidence of disorderly behavior in the prison in relation to phase of the menstrual cycle. Dalton found that 49% of 156 newly committed prisoners had committed their offense during the week preceding menstruation or the time of menstruation (paramenstruum). Of these 156 women, 27% were found to have PMS. In this group, 63% had committed their offense during the paramenstruum. A review of 156 records of disorderly conduct from the same group revealed that 70% of the offenses occurred during the paramenstruum.

Dalton has suggested that the impact of PMS is far reaching. She has suggested that PMS contributes to absenteeism in industry; accident proneness in the home, factory and on the road, child abuse and marital discord. Additionally, she reports that 46% of psychiatric admissions and 53% of suicide attempts occur during the paramenstruum.

In a well designed study to determine the incidence and severity of PMS among a volunteer population of 249 women prisoners, Morton et al. (1953), utilized a 21-item self-administered questionnaire. The severity level was determined by a three point scale utilizing "none," "mild" and "severe." The subjects were considered to have PMS if they checked three or more items in the severe column. Using this criteria, Morton, et al. reported a 38% incidence in the 19-30 age group, a 29% incidence in the 31-40 age group and a 33% incidence in the 41-50 age group. The frequencies for each symptom were reported only if the item was rated as severe. A high frequency of nervous and emotional symptoms was reported by this population (see Table 2). Of the 21 symptoms, six were reported at the severe level by over 50% of the subjects. Eighty percent reported their symptoms reoccurred monthly and 88% reported they subsided with the onset, during or after menstruation. (Forty-eight percent also reported menstrual disturbances).

In addition to the incidence and severity of PMS, Morton's, et al. (1953) study had three other objectives: 1) to determine the effect of PMS on social attitude, behavior, and work output; 2) to correlate the time of commission of the crime for which the inmates were imprisoned and the phase of the menstrual cycle; and 3) to evolve, if possible, an effective therapy for the relief of PMS.

The treatment regimen for this study consisted of medication, placebo and dietary changes. The medication was an enteric coated tablet containing ammonium chloride, homatropine methylbromide,

Table 2: Percentage Reported Symptoms of Premenstrual Tension in a
Population of Women Prisoners

<u>Symptom</u>	<u>Total Percentage</u>	<u>% Prison</u>	<u>% Reformatory</u>
Nervous and emotional instability	84	82	87
--irritability	63	61	65
--nervousness	55	50	59
--fatigue and exhaustion	40	27	54
--crying spell or "blues"	42	45	39
--inability to concentrate	20	16	23
Craving for sweets	37	31	45
Increased appetite	23	16	31
Weakness or faintness	27	24	30
Trembling of fingers (shakes)	27	21	33
Low abdominal pain	70	60	82
Abdominal bloating	50	46	55
Headaches	59	65	53
Generalized aches and pains	43	37	49
Gain in weight or edema	28	30	27
Painful swelling of breasts	28	28	27
Nausea or vomiting	19	14	25
Menstrual disturbance	48	34	64
Symptoms recur monthly	80	81	77
Symptoms subside with onset, during, or after menstruation	83	82	85
 Total Patients	 249	 131	 118

n = 249

Adapted from: Morton, Additon, Addison, Hunt, & Sullivan. (1953). A
clinical study of premenstrual tension. American Journal of
Obstetrics and Gynecology, 6(65), 1182-1191.

caffeine and vitamin B complex. Two tablets were taken three times per day for the ten days preceding menstruation. The medication and placebo were given by the prison staff who did not know which medication was the placebo. The dietary changes included a protein supplement of milk and cheese between meals and at bedtime and a decrease in salt and sugar intake during the second half of the menstrual cycle. After the initial administration of the instrument the treatment regimen began. The treatment was continued for six weeks during which time the prison staff and the investigation team observed the subjects. At the end of this time the instrument was administered again with two additional questions: 1) Do you think your symptoms have changed since the treatment? and 2) Do you think you have benefited from the treatment? For the group receiving the placebo, 39% of the subjects reported symptom improvement and 61% reported no change or worse symptoms. For the group on medication, 79% reported improvement in symptoms while 21% reported no change or worse symptoms. This reported 40% difference in symptoms between the two groups is significant at the .001 level.

No data were reported to substantiate changes in social attitude or behavior, but it was reported that the prisoners, prison staff and investigators noted an improvement in these areas during the course of the study. Work output could not be reported statistically because there were too many confounding factors which might have affected the outcome. However, it was the opinion of the staff that work output improved (Morton, et al., 1953).

A summary of Morton's, et al. (1953) findings regarding the value of treatment indicates: 1) 15% reported improvement when given placebo only; 2) 39% reported improvement with placebos plus supplemental high protein diet; 3) 61% reported improvement when given medication; and 4) 79% reported improvement when given medication plus supplementary high protein diet. The investigators classified the symptomatic response to therapy into three groups: 1) nervous and mental symptoms, 2) symptoms due to fluid retention; and 3) menstrual disturbances. Morton, et al (1953) reported the greatest response to treatment on the group with nervous and mental symptoms and the least response in the group with menstrual disturbances. The records of 58 subjects imprisoned for unpremediated crimes of violence (murder, manslaughter and assault) reported that 62% of the crimes were committed in the premenstrual week and 17% during menstruation (Morton, et al., 1953). The investigators in this study believed the medication effectively relieved symptoms but did not effect the estrogen-progesterone imbalance which was the underlying problem.

The results of Morton's study could not be generalized to a non-imprisoned population, but are interesting when compared to studies on similar and dissimilar populations. The incidence and severity of PMS are similar to incidence and severity reported by other investigators (Abraham, 1983; Bickers & Woods, 1951; Dalton, 1964; Mukherjee, 1954; Sutherland & Steward, 1965). Morton's, et al (1953) finding of a higher incidence in the younger age group were

not consistent with the reports of other investigators who have reported the incidence increasing with age (Abraham, 1983; Dalton, 1964). The impact on social attitude, behavior and work output have been reported by other investigators (Bickers & Woods, 1951; Dalton, 1960, 1961, 1977).

In 1968, Moos in developing a Menstrual Distress Questionnaire, identified eight major symptom clusters encompassing a total of 47 items (see Figure 4). His items were selected from a variety of sources including: 1) women given an open-ended questionnaire and/or interview eliciting information about menstrual cycle symptoms; 2) a review of previous research; and 3) a list of control symptoms obtained from the Blatt Menopausal Index. In addition to the menstrual symptom items the questionnaire asked for the following information; age, education, how long married, number of children, length of menstrual cycle and length of flow (Moos, 1968).

The subjects for this study (Moos, 1968) were a volunteer sample of 839 wives of graduate students at a large western university, who were given this one time retrospective questionnaire. The average age of the subjects was 25.2 years (S.D. = 3.9) and average education was 15.2 (S.D. = 1.7). The length of the menstrual cycle was 30.3 days (S.D. = 4.7) and the length of the menstrual flow was 5.5 days (S.D. = 2.0). In this population the pain, concentration, behavioral change and autonomic reaction scores showed higher means in the menstrual phase, whereas the water retention, negative affect and arousal scales show higher mean scores in the premenstrual phase.

Figure 4: Moos MSQ Symptoms

<u>PAIN</u>	<u>WATER RETENTION</u>
5. Muscle Stiffness	1. Weight Gain
9. Headache	10. Skin Disorders
16. Cramps	30. Painful Breasts
22. Backache	34. Swelling
25. Fatigue	<u>NEGATIVE AFFECT</u>
37. General Aches and Pains	3. Crying
<u>CONCENTRATION</u>	11. Loneliness
2. Insomnia	21. Anxiety
6. Forgetfulness	27. Restlessness
7. Confusion	36. Irritability
24. Lowered Judgment	38. Mood Swings
29. Difficulty Concentrating	40. Depression
33. Distractible	45. Tension
42. Lowered Motor Coordination	<u>AROUSAL</u>
<u>BEHAVIOR CHANGE</u>	13. Affectionate
4. Lowered School or Work Performance	14. Orderliness
8. Take Naps, Stay in Bed	18. Excitement
15. Stay at Home	31. Feelings of Well-Being
20. Avoid Social Activities	47. Bursts of Energy, Activity
41. Decreased Efficiency	<u>CONTROL</u>
<u>AUTONOMIC REACTIONS</u>	12. Feelings of Suffocation
17. Dizziness, Faintness	19. Chest Pains
23. Cold Sweats	32. Ringing in the Ears
26. Nausea, Vomiting	39. Heart Pounding
28. Hot Flashes	43. Numbness, Tingling
	46. Blind Spots, Fuzzy Vision

¹The MDQ item numbers are given for each item.

Adapted from: Moos, R.H. (1968). The development of a menstrual distress questionnaire. Psychosomatic Medicine, xxx(6), 853-867.

All the scales (except arousal and control) show large differences between menstrual and intermenstrual and between premenstrual and intermenstrual. Each of the 35 symptoms on the first six scales shows a statistically significant ($p < 0.05$, Mann-Whitney U-Test) cyclical variation with the menstrual cycle. Only 12 symptoms do not show cycle phase differences. Moos has cited this as support for the ability of the instrument to differentiate between PMS and dysmenorrhea, however, this was not upheld by other investigators (Taylor, 1979; Woods, et al., 1980). Approximately 30-50% of this normal population of young married women were bothered to some extent by cyclical symptoms of cramps, backache, headache, irritability, mood swings, tension and/or depression. This range of symptom prevalence is similar to the range identified by Coppen and Kessel (1963), Sutherland and Steward (1965) and Woods, Most and Dery (1980).

Moos (1968) reported additional findings which have been reported by other investigators (Abraham, 1983; Dalton, 1977). He found that older women have a slight tendency to complain more of symptoms on the premenstrual phase. Moos compared the 99 women, 21 years of age and under, to the 87 women, 31 years and over, and found a statistically significant ($p < 0.01$) difference for the behavioral change scale in the premenstrual phase with the older woman having higher means. The young women had higher means on all but one of the eight scales in the menstrual phase.

It has been suggested that a one-time retrospective rating system is affected by the mood of the day. Thus, a woman who is in the premenstrual phase when she fills out the questionnaire might report more symptoms for this phase than a comparable woman who is not in the premenstrual phase (Halbreich, et al., 1982). Moos (1968) calculated correlations between the phase each woman was in when she filled out the questionnaire and the symptom scale scores and did not find any significant correlations. Rouse (1978) reported these same findings with Moos' instrument.

In a well controlled study, Woods, et al. (1980) utilized the Moos instrument to describe the distress associated with menstruation in a community population. The subjects were 179 women ranging in age from 18 to 37 years with a mean age of 27.7 (S.D. = 4.6). One hundred six of the women were married (54.9%); 57 single (29.5%); and the remainder were remarried, divorced, separated or widowed (14.5%). Sixty-six (33%) of the women were black and 128 (67%) were white. The income of the subjects ranged from \$2,000 to more than \$40,000 annually with a median of about \$16,700. Seventy-eight percent of the women had one or more children. The 179 women were contacted by an interviewer and asked to complete the MDQ.

Woods, et al. (1980), postulated that for a symptom to be regarded as a component of perimenstrual distress it should differ in frequency and intensity across cycle phases being exacerbated in the perimenstruum. Using the remainder of the cycle as a baseline, two-tailed t-tests were performed on the means scores for each of the

47 MDQ symptoms to determine cycle phase differences. Cycle phase variation was said to exist when there was a statistically significant difference ($p < .01$) between the mean scores on the MDQ for premenstruum versus the remainder, or the menstruum versus the remainder of the cycle. Using this criteria, cycle phase differences were not found for 31 of the 47 items. This finding contradicts Moos (1968) who reported statistically significant cycle phase differences for 35 symptoms. However, significant cycle phase differences were found for 15 of the items. These items included; weight gain, crying, take nap/stay in bed, skin disorder, headache, cramps, anxiety, lowered school/work performance, fatigue, painful or tender breasts, swelling, irritability, mood swing, depression and tension. Of these 15 items, 11 affected at least 30% of the women. Crying, taking a nap/staying in bed, anxiety and lowered school/work performance were reported by less than 30% of the women.

Woods, et al. (1980) failed to find support for the theory that premenstrual and menstrual distress are two separate constructs. Although statistically significant differences were found between premenstrual and menstrual scores, the actual magnitude of difference was small. This was also borne out in the small difference in prevalence of symptoms reported in the premenstrual and menstrual period. This contradicts the work of Dalton (1977) but is consistent with the findings of Webster, et al. (1979) and Taylor (1979). Woods, et al. (1980) suggest that perimenstrual symptoms influence a significant portion of women and a small number of these suffer severely.

Twelve years of clinical experience and a thorough evaluation of available instruments convinced Abraham (1983) that none of the available instruments were able to differentiate between PMS and dysmenorrhea. He suggested that the Moos instrument encompassed symptoms of dysmenorrhea and items that were not directly relevant to PMS in a clinical context (Abraham, 1983). Clinical testing of various modifications of the Moos instruments resulted in a 19-item scale which Abraham suggested showed the greatest changes premenstrually. Abraham (1983) further suggested that these items clustered into four subgroups (See Figure 5). All 19 of Abraham symptoms are contained in the Moos instrument with minor exceptions. Moos' changes in eating habits was made into two more specific items; increased appetite and craving for sweets. Moos' item swelling was changed to abdominal bloating and swelling of extremities. Ten of these items corresponded to the items Woods et al. (1980), reported as showing a cycle phase difference and affecting 30% of the women in their study.

Abraham (1983) has not discussed PMS and dysmenorrhea as the same or separate constructs, however, he has published extensively on PMS (Abraham, 1980; Abraham, 1983; Hargrove & Abraham, 1983). His clinical practice (Abraham, 1980) and research (Abraham, 1983; Goei & Abraham, 1983) have focused on PMS and from this he has theorized that PMS is not one syndrome but a group of syndromes. Abraham has divided these into four subgroups based on presenting symptoms cluster (see Figure 5). His subgroups designated PMS-A, PMS-C, PMS-H

Figure 5: Abraham's Subgroups of Symptom Clusters

PMS-A

Nervous Tension
Mood Swings
Irritability
Anxiety

PMS-C

Headache
Craving for Sweets
Increased Appetite
Heart Pounding
Dizziness or Fatigue

PMS-H

Weight Gain
Swelling of Hands or Feet
Breast Tenderness
Abdominal Bloating

PMS-D

Depression
Forgetfulness
Crying
Confusion
Insomnia

Adapted from: Abraham, G. (1980). Premenstrual Tension Syndromes.
In L.K. McNall (Ed.), Contemporary obstetric and gynecologic
nursing. St. Louis MO: C.V. Mosby Company.

and PMS-D are widely used in clinical practice as the basis for diagnosis and treatment of PMS (Abraham, 1980, 1983; Lark, 1984; Lauersen, 1985; Norris, 1983).

Abraham's (1983) tool was used as a screening instrument to diagnose the presence of PMS and identify the type or types affecting the client. Using this scale to evaluate 325 menstruating women not on hormonal contraceptives, Abraham found a PMS prevalence of 54%. In this group the prevalence of subgroups was PMS-A, 75%; PMS-H, 72%; PMS-C, 35%; and PMS-D, 37%. This was a primarily white, middle class population of students and clerical employees. The average age was 25 years (S.D. = 2.5). Using this same tool on 1,395 gynecologic patients not on hormonal therapy, Abraham (1983) reported a 50% prevalence of PMS. The age range of this population was 13 to 54 years with a means of 32 (S.D. = 8.6). A peak prevalence of PMS was reported in women between 30 and 40 (60%). The lowest incidence was in the 13-15 age group (22%) and the second lowest was in the 15-20 age (33%). While Abraham's (1983) reported incidence is higher than some investigators (Moos, 1968; Woods, et al., 1980) the relationship between increasing age and increase in severity of symptoms has been suggested in other studies (Dalton, 1977; Moos, 1977; Morton, et al., 1953). In this group Abraham (1983) reported the following prevalence of subgroups PMS-A, 66.2%; PMS-H, 64.7%; PMS-C, 24%; and PMS-D, 22.9%. The similarities and differences between Abraham's incidence for the subgroups and the findings of other investigators can be seen in Table 3.

Table 3: Frequency of Symptoms of PMS Reported in Literature

INVESTIGATION Year Reported	PERIOD 1953	PERIOD 1957	PERIOD 1968	PERIOD 1971	PERIOD 1976	PERIOD 1979	PERIOD 1982	PERIOD 1983	PERIOD 1985
Sample Size	494	1000	819	740	3223	65	179	325	1395
Sample Description	Prison Belgium	M.B. and College Students	Grad Students Mives	University Students	University Students	Hospital Staff	General Population	Outpatients	QIM Patients
Location	U.S.A.	U.S.A.	U.S.A.	Finland	Scotland	Australia	U.S.A.	Los Angeles	U.S.A.
Mean Age	2	7	25	21.5	7	25	28	25	32
(PMT A)*	--	--	--	--	--	--	--	41	31
Nervous Tension	55	36	41.2	--	11.0	31	41.9	--	--
Head Swings	--	--	44.2	--	--	45	51.2	--	--
Irritability	61	47	52.2	57.5/70	32.5	40	56.4	--	--
Anxiety	--	--	--	--	--	--	30.4	--	--
(PMT B)*	--	--	--	--	--	--	--	39	34
Weight Gain	28	--	33.9	32/30	--	40	45.0	--	--
Swelling Extremities	--	--	--	57/49	--	28**	--	--	--
Breast Tenderness	28	18	34.6	61/47	--	--	35.5	--	--
Abdominal Bloating	50	2	35.5	--	--	28**	44.7	--	--
(PMT C)*	--	--	--	--	--	--	--	19	12
Headache	59	30	29.4	11.6/46.8	24	--	34.7	--	--
Craving Sweets	37	--	--	--	--	--	--	--	--
Increased Appetite	23	--	--	--	--	--	--	--	--
Heart Pounding	--	--	--	--	--	--	--	--	--
Fatigue	40	--	--	30/41/2	16	24	32.4	--	--
Dizziness, Faint	27	1	4.7	--	1.5	--	--	--	--
(PMT D)*	--	--	--	--	--	--	--	20	14
Depression	--	--	42.9	10.2/43.2	31	40	36.7	--	--
Forgetfulness	--	--	--	--	--	--	--	--	--
Crying	42	--	27.9	--	--	--	44.1	--	--
Confusion	--	--	--	--	--	--	--	--	--
Insomnia	--	11	--	--	--	--	--	--	--

*Mutual Symptom Grouping
**Combined

METHOD OF DETERMINING PERCENTAGE OF PMS	3-Point Scale Upper 2 Quality	Yes/No Questionnaire	6-Point Scale Upper 4 Quality	Yes/No Questionnaire Phys Ed/ Non Phys Ed	Yes/No Questionnaire	6-Point Scale Upper 4 Quality	6-Point Scale Upper 4 Quality	4-Point Scale Average Phase Difference of 1-Point for Grouping Qualities
--	--	-------------------------	--	--	-------------------------	--	--	--

Abrahams scale and its usefulness as a clinical tool has been reported by several clinicians (Goei & Abraham, 1983; Lark, 1984; Lauersen & Stukane, 1983). The tool is used to evaluate clients and identify the type or types of PMS they are experiencing. When the type of PMS is determined, a treatment regimen is recommended based on the subgroup the client is experiencing. While use of this classification system and a treatment regimen based on it have been reported, results of treatment in clinical practice or in well controlled studies have not been reported.

Summary of PMS Literature

In the literature there is agreement that PMS is a cluster of physical and psychological symptoms that occur anytime from ovulation to the onset of menses followed by a symptom free phase. There is also agreement that the symptoms are very diverse and the timing of the symptoms is more significant in diagnosis than the type of symptoms (Abraham, 1983; Budoff, 1983; Dalton, 1977; Frank, 1931; Greene & Dalton, 1953; Harrison, 1982; Lark, 1984; Lauersen, 1985; Morton, et al., 1953; Norris & Sullivan, 1983; Reid & Yen, 1981; Rose & Alplanalp, 1983). Estimates of incidence range from 15% to 100% of menstruating women (Reid & Yen, 1981). When subjects reporting mild symptomatology are excluded, there is agreement that 30% to 45% of menstruating women have PMS and that 7% to 10% experience symptoms severe enough to interfere with family and social relationships and

job performance (Abraham, 1983; Dalton, 1977; Lauersen & Stukane; 1983; Moos, 1968; Morton, et al., 1953; Norris & Sullivan, 1983; Sutherland & Stewart, 1965; Taylor, 1979; Woods, 1980).

There is no agreement in the literature as to the most appropriate instrument to 1) define index severity, 2) discriminate between PMS and dysmenorrhea; or 3) subclassify premenstrual changes. Several instruments have been developed to describe menstrual cycle symptomatology but, thus far, no one instrument has performed all three functions or demonstrated test-retest reliability (Chesney & Tato, 1975; Halbriech, et al., 1982; Moos, 1968, Rubinow & Roy-Bryne, 1984; Taylor, 1979; Woods, 1980). The most commonly used instrument is the Moos Menstrual Symptom Questionnaire (1968) but the results with this instrument are contradictory (Moos, 1968; Woods, 1980). At the present time, research on PMS suffers from the lack of a reliable instrument.

Adolescence

Adolescent development has been approached and studied from several perspectives including biological, psychological and sociological (Allen-Lia, 1981; Blos, 1962; Erickson, 1968; Gander & Gardiner, 1981; Kaluger & Kaluger, 1979; Tanner, 1962). For this study, literature focusing on the middle adolescent girl, the menarche and the menstrual experience will be reviewed.

There is agreement in the literature that adolescence extends from approximately 12 to 21 years of age (Blos, 1962; Erikson, 1963, 1968; Gander & Gardiner, 1981; Kaluger & Kaluger, 1979). There is additional agreement that this developmental period can be further subdivided into three phases; early adolescence, middle adolescence and late adolescence (Blos, 1962; Kaluger & Kaluger, 1979). Blos (1962) has used the term "Adolescence Proper" rather than middle adolescence and has not set the parameters as definitely as Kaluger and Kaluger (1979). Blos sometimes includes the 14 year old in this phase and other times excludes them. Kaluger and Kaluger (1979) has set the ages 15 to 18 as the parameters of this middle adolescent phase.

The biological development of this period has been well reported and there appears to be agreement about the physical characteristics of the 15 to 18 year old girl. At this time period there is agreement that the rate of growth is slower than in the early adolescent period (Gander & Gardiner, 1981; Kaluger & Kaluger, 1979; Hopkins, 1983). Some authors state the girl has reached her adult height at 16 (Gander & Gardiner, 1981) and others suggest this does not occur until 18 (Kaluger & Kaluger, 1979). The secondary sex characteristics are mature in size and function, however, the primary sex characteristics may not be fully mature until the late adolescent period. There is general agreement that the process of sexual maturity follows a more or less orderly and predictable path. The

description and labeling of these stages by Tanner (1962) are generally accepted as guidelines to normal development (Allen-Lia, 1981; Hopkins, 1983; Kaluger & Kaluger, 1979).

More than any single event of puberty, menarche signals the transition from childhood to adulthood. This event, which occurs at approximately 12.5 years (Allen-Lia, 1981; Gander & Gardiner, 1981; Hopkins, 1983; Kaluger & Kaluger, 1979), is a biological occurrence fraught with psychological and sociological implications. Menarche is an event that has, in all societies and cultures, marked a rite of passage from child to adult. The meaning of menarche to the individual girl is influenced by the attitudes of her parents (especially her mother), her peers and her culture (Brooks, Ruble, & Clarke, 1977; Clarke & Ruble, 1978; Dalton, 1983; Gander & Gardiner, 1981; Weideger, 1975; Woods, et al., 1982).

In the literature there is speculation on the relationship of several factors to menstrual attitudes, perimenstrual symptoms and disability. Gander and Gardiner (1981) suggest that the girl's attitude is "greatly influenced" by how well she understands the menstrual process. They further suggest that parents prepare their daughters well for this experience which can be viewed as fearful and traumatic or as a positive sign of approaching adulthood (Gander & Gardiner, 1981).

Clarke and Ruble (1978) sought to determine to what extent pre and postmenarcheal girls are aware of the cultural view of menstrual women and whether they incorporate any aspects of these beliefs into

their own menstrual self-concept. Their study consisted of 18 premenarcheal girls (mean age 12-8), 18 postmenarcheal girls (mean age of 12-11) and 18 boys (mean age 12-10). The boys were included as a control to help interpret differences between the two samples of girls. The subjects completed a questionnaire assessing general attitudes toward menstruation, expected symptoms, perceived effects on moods and activities and possible sources of information. In general, the results suggest that for this population, menstruation is associated with a set of mostly negative expectations and attitudes. Most believe it is accompanied by physical discomforts, by increased emotionality and mood changes and by disruption of activities and social interactions. One way ANOVAS performed on three factors revealed that boys and postmenarcheal girls considered menstruation to have more of a negative effect on moods and school work than did premenarcheal girls, $F(2, 51) = 4.16, p < .05$, and $F(2, 51) = 6.12, p < .01$.

Clark & Ruble (1978) suggest that a girl enters menarche with a clear set of expectations, most of which are negative. Clarke and Ruble conclude, therefore, that her experience of menstruation is primed to be a self-fulfilling prophecy. They further conclude that physiological explanations of menstrual distress may be overemphasized and suggest that specific aspects of the socialization process in the menstrual experience must be carefully considered in future research. Clarke and Ruble specifically suggest research regarding the role of the nature and timing of information in the perception of the menstrual experience.

In contrast to this study is a study of older women (18-35, mean age of 27.7, S.D. = 4.6) by Woods (1985) who assessed the extent to which a woman's environment and socialization influenced her experience of perimenstrual symptoms (PS), related disability and menstrual attitudes. Woods (1985) results suggested that women's experience with menstrual symptoms have an effect on menstrual attitudes. In her study the negative affect had the most important effect on menstrual attitudes. Woods (1985) suggests that women who believe that menstruation is debilitating do so not only because of their attitudes about women's role but also because of their experiences with disruptive symptoms. Wood's (1985) study presents an interesting contrast to the work of Clarke and Ruble (1978) when it is considered that this population had, on the average, 15 more years of menstrual experience.

In reviewing the literature on menarche and the menstrual experience, it is apparent that many factors appear to influence the nature of this experience for the adolescent girl. The specific nature of these factors and the extent of their influence is not agreed upon. Lack of research on the effects of the menstrual experience on this age group is apparent.

Summary

The review of literature on PMS demonstrates the lack of agreement as to a precise definition of this syndrome or to the symptoms which constitute it. Agreement is noted on the cyclic

nature of symptom occurrence. It is also noted that the reports of the incidence and impact of this syndrome vary from 15 to 100%, depending on the definition of PMS and the level of severity required for it to be included in the statistics. The Moos Menstrual Distress Questionnaire was discussed and it was noted that there is lack of agreement as to its ability to discriminate between premenstrual and menstrual symptomatology. Rationale was provided for the use of the Abraham (1983) instrument as a tool for assessing symptoms of PMS. Development of the middle adolescent girl was discussed particularly with regard to menarche and the menstrual experience. Lack of information about this experience for this age group was noted. The premenstrual phase of the menstrual experience for this age group will be described in this study. Methodology and procedure are presented in Chapter IV.

CHAPTER IV

METHODOLOGY AND PROCEDURES

Overview

This study was designed to describe the reported presence, type and severity of symptoms (of PMS) experienced by 15 through 18 year old girls the week preceding their period, during their period and the remainder of the month. A brief menstrual history was collected and also sociodemographic data to characterize the study sample.

In this chapter the variables are operationally defined and the criteria for selection of subjects is explained along with sampling techniques. This is followed by a description of field procedures, a discussion of the instrument, validity and reliability, data collection, procedures and scoring. This chapter is concluded with a discussion of the methods of statistical analysis and human rights protection.

The information for this descriptive study was gathered by means of a questionnaire administered to a convenience sample in a parochial school. The questionnaire was self-administered by 142 girls ages 15 through 18.

Hypothesis and Questions Posed

Data are presented in Chapter V to address the following questions: 1) What symptoms are reported by 15 to 18 year old girls during the week before their menstrual period, during their menstrual period, and during the rest of the month; and 2) How severe are the symptoms reported in each phase of the cycle?

The following hypothesis was tested in this study:

There is a relationship between the phases of the menstrual cycle and the severity of symptoms reported.

Methods

Description of Design

This study used a one-time self-reported measure of 15 to 18 year old girls to determine what type of premenstrual symptoms they report, the severity of the symptoms and when they occur. The variables in this study were the responses to the instrument identified by clinicians to diagnose PMS. These symptoms are considered diagnostic of PMS when they occur or increase in severity in a cyclic pattern prior to the onset of menstruation (Abraham, 1980; Lark, 1984; Lauersen, 1985). The level of severity is assessed by using a four-point scoring scale developed by Abraham (1980); None = 0, 1 = mild, 2 = moderate and 3 = severe.

Operational Definition of Variables

Questions pertaining to sociodemographic characteristics of the study subjects are on page one of the questionnaire located in Appendix B.

For the purpose of this study, PMS has been defined as a cluster of physical and psychological symptoms that occur any time from ovulation to the onset of menses, followed by a symptoms free phase.

Phases of the menstrual cycle.

Premenstrual phase: The seven calendar days prior to the onset of menstruation.

Menstrual phase: Includes day from the beginning of menstrual flow until cessation of flow.

Remainder of the month: Beginning the day after cessation of flow and ending seven days prior to the onset of menstruation (see Appendix D).

Symptoms: Responses to Abraham's Menstrual Symptomatology Questionnaire including the 19 symptoms of PMS (see Appendix D). These symptoms are: nervous tension, mood swings, irritability, anxiety, headache, craving for sweets, increased appetite, heart pounding, fatigue, dizziness or fainting, depression, forgetfulness, crying, confusion, insomnia, weight gain, swelling of hands or feet, breast tenderness, abdominal bloating.

The severity of symptoms is assessed using a four-point scale: 0 = none, 1 = mild, 2 = moderate and 3 = severe. The definition or meaning of symptoms will be as understood by the subjects.

Sample

The subjects for this study were 142, 15 to 18 year old girls who attend a Midwestern high school in a medium-sized urban setting. The school was a four-year, private parochial high school with a student population of 458. Permission to conduct this survey was obtained from the Principal and the Assistant Superintendent of Schools.

1. Girls ages 15 through 18 who agreed to participate.
2. Parents have granted permission for participation.
3. Girls are in school the day of the survey so presumed to be well enough to attend school.

Although there are no known systematic differences between those who participated and those who did not, differences may exist. The research findings can be generalized only to similar populations.

Instrument

The instrument utilized in this study was adapted from the Menstrual Symptomatology Questionnaire (MSQ) developed by Abraham (1980). Abraham selected the items from a questionnaire developed by Moos (1977). Moos' questionnaire contained 47 items which were found to group in eight clusters of empirically correlated symptoms. The Moos questionnaire was developed specifically to assess changes in relation to the menstrual cycle including changes indicative of dysmenorrhea. Abraham's (1983) questionnaire was developed to include only symptoms that showed the greatest changes premenstrually. Abraham (1983) found that of these 47 items, 19

occurred most frequently based on his experience in clinical practice. Woods, et al. (1980) used the Moos instrument in an attempt to determine if PMS and menstrual symptoms were separate constructs. Woods, et al. (1980) found cycle phase differences for only 16 of the 47 items included in Moos questionnaire. Of these 16, only eight items were more prevalent premenstrually (Woods, et al., 1980).

The following demographic data were collected to profile the sample for: age, grade, racial or ethnic background, and family income level. Menstrual history questions were included to determine that the subjects actually had experienced menarche and had established a cycle.

This instrument was selected for this study for the following reasons: 1) the 19 items have been most frequently reported to show cycle phase differences and have been identified as indicators of PMS in other studies (Abraham, 1983; Sheldrake & Cormack, 1976; Taylor, 1979); 2) it has been used in clinical practice and it would be appropriate as a clinical assessment tool for nursing; and 3) preliminary tests on this instrument on eight girls, ages 15 to 18, indicated it is easily understood and can be completed by 15 to 18 year old girls without difficulty. The Moos instrument and the Abraham instrument were pretested on eight girls, ages 15-18, with a three to eight day interval between administration of one instrument and administration of the other. The Abraham instrument (MSQ) took a maximum of ten minutes for the girls to complete. The instructions

and meaning of items were reported to be easily understood. The Moos instrument was reported confusing and needed clarification by the investigator at several points. The instrument used in this study required 20 minutes to complete. All girls reported that the list of symptoms was too long and one reported losing interest on the second page. Subjects stated the instructions were a little confusing and identified difficulty in remembering the descriptive categories. The Abraham entire instrument was reviewed for readability, clarity of direction, and length of time required to complete by four members of the nursing faculty. No problems were identified and no revisions were made.

Reliability and Validity

Polit and Hungler (1983) state the reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring. Additionally, they state the reliability of an instrument is not the property of the instrument, but rather of the instrument when administered to a certain sample under certain conditions. Reliability and validity of the instrument used for this study have not been reported previously. The reliability of this instrument in this study was assessed by the internal consistency approach. The advantages of this approach is that it requires only one test administration and it is one of the best means of assessing the sampling of items (Polit & Hungler, 1983). The reliability was assessed by the coefficient alpha

method. This method reflects the degree to which the instrument is free of variances due to extraneous factors. The normal range of values is between 0.0 to +1.0 with a higher coefficient indicating a greater level of reliability. If reliability was not obtained at the .66 level, then addition of items which positively correlate with the items in the instrument would increase the reliability coefficient.

Validity refers to the degree to which an instrument measures the attribute or concept it is supposed to measure. The validity of an instrument is extremely difficult to establish. Polit and Hungler (1983) identify three types of validity: content, criterion and construct validity. Content validity looks at the degree to which an instrument adequately covers the components of a particular area being measured. In this instrument, the question was "Do the items in the scale adequately cover the range of symptoms of PMS?" Criterion related validity assesses whether the instrument will demonstrate the same results as some other criterion. The validity of this instrument as a predictor is supported by Abraham (1983) who reports a correlation between this retrospective instrument and a menstrual symptoms diary which is kept for an entire cycle. He reports a correlation between the questionnaire scores and the diary scores for the three worst premenstrual days, but does not report the coefficient alpha (Abraham, 1983).

Construct validity assesses whether the instrument actually measures the concept under investigation. Thus far in the investigation of PMS, there has not been an agreed upon definition or

even an agreed upon set of symptoms. However, various investigators have agreed on some symptoms which are characteristic of PMS. In this instrument, ten items are reported to have significant cycle phase differences in at least three other studies (Abraham, 1983; Halbreich, et al., 1982; Moos, 1977; Taylor, 1979; Woods, et al., 1980). The remaining nine symptoms are reported in at least two of the studies cited. At this time PMS remains an abstract concept which will be measured with more confidence as further investigation is done on all aspects of the concept. The judgment of the investigator is that the items in this instrument measure the construct, PMS, therefore this instrument has construct validity.

Field Procedures or Data Collection Procedures

This study was conducted by the researcher at the school. Assistance was provided by another nursing graduate student. Questionnaires were given to 142 girls, 15 through 18 years of age. Prior permission was obtained from the girls' parents via a letter the girls took home one week before the survey (see Appendix A). All girls whose parents granted them permission to participate were asked if they wanted to take part in the study. The survey was conducted in the school cafeteria during the homeroom period.

Prior to distribution of the questionnaire, the subjects were given the following information and instructions by the Principal:

1. Introduction of researcher Margaret Kingsbury, a student in the MSU Masters in Nursing Program.

2. Explanation that the researcher was collecting information on type and severity of symptoms girls usually experience during different times of the month. (Month meaning menstrual month, not calendar month.)
3. Assurances that the surveys were anonymous.
4. Assurance that researcher was willing to answer questions after all questionnaires are completed.
5. Assurance was given that they did not have to participate in the study.

After this explanation, pencils were provided to those who needed them and questionnaires were distributed by the researcher, another nursing graduate student, and two teachers. During test administration, the researcher was available in the room to clarify points, if necessary. Some students asked for a calendar to determine the date of their most recent period. When completed, the questionnaires were collected and returned to the researcher. The information on the questionnaire was coded on optiscan data sheets and entered into the computer for analysis.

Scoring and Data Summarizing

To address the two questions, descriptive statistics were utilized to describe the results of the study. Frequency distributions and percentages were based on the number of subjects who participated in the survey and are reported on each of the 19 variables. The severity of symptoms was quantitatively assessed for

each symptom of PMS for each cycle phase. Abraham's (1983) four-point scoring system was used with 0 = none, 1 = mild, 2 = moderate and 3 = severe. The severity reported for each symptom by each subject during each cycle phase was totaled and the mean severity for each symptom was computed. Cycle phase differences were described and the mean and standard deviation was reported.

Statistical Analysis

The statistical analysis of the 19 items in this study was reported for the week before the start of the menstrual period, during the period and for the rest of the month. Frequency and severity were reported for each item for each cycle phase. The following comparisons were made by symptoms: 1) mean severity for week before the period to mean severity for rest of the month; 2) mean severity for during the period to mean severity for rest of the month; and 3) mean severity for week before the period to mean severity for during the period. Two-tailed t-tests were performed on the mean difference in severity for each of the 19 symptoms in the scale for each of the three phases. Cycle phase differences were said to exist when there was a statistically significant difference ($p < .01$) between the mean severity level of the symptoms across any of the cycle phases. The differences and levels of significance are reported for each symptom and for the scale. The hypothesis is accepted or rejected based on a statistically significant difference between the cycle phases.

Additional Findings

Several investigators have examined the relationship between age of the subjects and severity of symptoms reported. They have also looked at the relationship between time since menarche and severity of symptoms reported (Abraham, 1983; Dalton, 1977; Moos, 1968; Morton, et al., 1953). These relationships were examined in this study.

Protection of Human Rights

Specific procedures were followed to assure that the rights of study participants were not violated. Michigan State University has a University Committee on Research Involving Human Subjects to screen research and provide protection for human subjects. The required documents were submitted to this committee and approval was obtained before the study was conducted (see Appendix C).

Permission to participate in the study was obtained from the parents of minors and all participants were asked to sign a consent form before filling out the questionnaire. Participation in the study was voluntary. The study participants were instructed not to provide any identifying information.

Summary

A discussion of the methodology and procedures used in this study were presented in Chapter IV. The variables were operationally defined, the sample was described and sampling techniques were

discussed. The instrument and scoring procedures were described.

Reliability and validity of the instrument were discussed.

Additionally, methods of statistical analysis were discussed. In Chapter V, data is presented and analyzed in relation to the research hypothesis.

CHAPTER V

DATA PRESENTATION AND ANALYSIS

Overview

The data presented in this chapter describes the study sample and the presence, type and severity of symptoms reported during three phases of the menstrual cycle. The description of the study sample includes demographic data and relevant menstrual history items. Following the description of the study sample the data from the 19 questionnaire items are presented. The reliability of the instrument is discussed.

In addition, data are presented and analyzed for the following hypothesis and questions:

There is a relationship between the phases of the menstrual cycle and the severity of symptoms reported.

1. What symptoms are reported by 15 to 18 year old girls during the week before their period, during their period and the rest of the month?
2. How severe are the symptoms in the week before the period, during the period and the rest of the month?

Descriptive Findings of the Study Sample

Demographic Variables

The demographic variables utilized in this study to describe the subjects are: age, grade, race or ethnic background, and income level. Additional demographic descriptors include health status, days absent from school in past year, chronic illnesses and current medications.

The sample consisted of 142 girls ranging in age from 15 to 18. A majority of the girls were Caucasian. Of the 50% who knew and reported family income, 25% were in the \$50,000 or more range, and 3% under \$20,000. School administrators verified the income information.

The health of the population is considered good, based on self reporting, a low rate of absenteeism, a small percentage reporting chronic illnesses and infrequent use of medications. Ninety-one percent described their health as good or excellent and 75% missed 5 or less days of school within the school year. Only 18% reported chronic illness and of these, 6% reported asthma and 6% reported allergies. Of the remaining 6% the following chronic illness were reported; ulcer (1), diabetes (1), heart murmur (1), high blood pressure (1), sinusitis (1), and fibrocystitis (1). This information is summarized in Table 4.

The menstrual history variables reported include length of time since menarche, the frequency and length of periods, and quantity of flow. All the girls in this study had experienced menarche with an

Table 4: Summary of Demographic Variables for Age, Grade, Race, Income Level, Health, Absence, Illness, and Medications

Variable	Respondents Number	Percent
Age in Years		
15	53	37
16	46	33
17	23	16
18	20	14
mean age 16.1 years		
Grade		
9	35	25
10	50	36
11	26	19
12	28	20
Racial or Ethnic Background		
White	129	91
Black	7	5
American Indian	2	1
Hispanic	2	1
Oriental	2	1
Other	0	--
Income Level		
Less than \$10,000	2	1
\$10,000 - \$19,999	3	2
\$20,000 - \$29,999	7	5
\$30,000 - \$39,999	8	6
\$40,000 - \$49,999	15	11
\$50,000 or more	35	25
Don't Know	69	50
General Health of Subjects		
Excellent	39	27
Good	91	64
Fair	11	8
Poor	1	1
Days of School Missed (September through May 15)		
0	16	11
1 - 5	92	64
6 - 10	26	19
11 - 15	3	2
over 15	5	4
Chronic Illnesses Reported		
Asthma	9	6
Allergy	8	6
Other	8	6
None	117	82
Medications in Use		
Aspirin	6	4
Tylenol	8	6
Migol	4	3
BCP	4	3
Other	36	25
None	92	65

n = 142

average length of time since menarche of three years, six months (S.D. = one year, seven months). The average length of flow was 5.4 days (S.D. = 1.3 days) and the average frequency of periods was 29.5 days (S.D. = 6.7 days). Quantity of flow was described as moderate by 71% of the subjects. The variables are summarized in Table 5.

Reliability of the Instrument

The reliability of the instrument used in this study was measured by computing coefficient alpha as explained in Chapter IV. No scale items were deleted. A coefficient alpha of .88 was obtained for the total scale of 19 items. This represents a high internal consistency among the 19 items of the scale (see Appendix D).

Questions

Two questions were asked by this study. The first question was: What symptoms are reported by 15 to 18 year old girls during the week before their period, during their period and the rest of the month? The raw data compiled to respond to this question are in Table 6.

In the week before the period, eight of the symptoms were reported at either the moderate or severe level by 30% or more of the subjects. These symptoms were: mood swings, 59%; irritability, 52%; fatigue, 43%; depression, 42%; abdominal bloating, 35%; craving for sweets, 34%; increased appetite, 31%; and weight gain, 30%.

Table 6: Percent Frequency of Symptoms Reported - All Subjects for All Phases of the Menstrual Cycle

SYMPTOMS	WEEK BEFORE PERIOD			DURING PERIOD			WEEK OF MONTH				
	None	Mild	Severe	None	Mild	Severe	None	Mild	Severe		
Nervous Tension	44	29	20	7	36	27	7	55	38	7	1
Mood Swings***	14	27	30	29	15	28	43	22	43	43	2
Irritability***	21	27	33	19	16	22	40	22	45	44	0
Anxiety	44	28	16	10	40	33	20	7	64	24	3
Headache**	43	28	17	12	36	31	18	16	55	30	3
Craving for Sweets*	39	26	17	17	39	29	20	12	44	39	4
Increased Appetite***	44	25	19	12	49	20	23	8	74	18	2
Heart Pounding	76	16	6	1	78	16	6	0	86	13	0
Fatigue***	32	24	28	15	27	19	35	20	52	32	1
Dizziness or Fainting	71	19	7	3	69	18	11	2	86	9	0
Depression***	29	29	26	10	25	23	33	18	46	42	3
Forgetfulness	72	20	5	3	68	21	10	1	78	17	4
Crying**	58	23	17	11	46	23	23	8	60	34	1
Confusion	61	24	14	1	62	20	14	4	70	27	0
Insomnia	67	18	9	6	62	16	14	9	74	19	3
Weight Gain***	42	28	22	8	41	28	24	6	76	21	0
Swelling of Hands or Feet	76	16	6	2	73	17	7	4	93	7	0
Breast Tenderness	51	22	20	7	49	23	21	6	92	7	0
Abdominal Bloating***	36	28	17	18	31	26	26	17	87	12	0

* 10% or more report moderate/severe combined in week before period only.

** 10% or more report moderate/severe combined during period only.

*** 10% or more report moderate/severe combined in both week before and during period.

During the menstrual period, 11 of the symptoms were reported at the moderate or severe level by 30% or more of the subjects. These symptoms were: mood swings, 65%; irritability 62%, fatigue, 55%; depression, 51%; abdominal bloating, 43%; nervous tension, 34%; headache, 34%; craving for sweets, 32%; crying, 31%; increased appetite, 31%; and weight gain, 30%.

Of these 11 symptoms, eight were also most prevalent premenstrually; mood swings, irritability, fatigue, depression, abdominal bloating, craving for sweets, increased appetite, and weight gain. During the remainder of the month, eight of the symptoms were not reported at the severe level by any of the subjects. These symptoms were irritability, heart pounding; dizziness or fainting, confusion, weight gain, swelling of hands and feet, breast tenderness, and abdominal bloating. Only six of the symptoms were reported at the moderate or severe level by more than 10% of the subjects. These were mood swings, anxiety, headache, craving for sweets, fatigue, and depression. In this study the subjects reported a higher frequency of symptoms during the premenstruum and menstruum than during the remainder of the month.

The second question was; How severe are the symptoms in the week before the period, during the period and the rest of the month? The mean symptom severity for each cycle phase is presented in Table 7 and the symptoms are listed in order of severity for the premenstrual week in Table 8. Severity was scored on a four-point scale with 0 = none, 1 = mild, 2 = moderate and 3 = severe. In the week before

Table 7: Mean Symptom Severity Reported - All Subjects for All
Phases of the Menstrual Cycle

Symptoms	Week Before Period	During Period	Rest of Month
Nervous Tension	.90	1.05	.54
Mood Swings	1.73	1.72	.74
Irritability	1.50	1.69	.66
Anxiety	.90	.94	.50
Headache	.99	1.14	.62
Craving for Sweets	1.12	1.05	.77
Increased Appetite	1.00	.90	.37
Heart Pounding	.34	.29	.16
Fatigue	1.27	1.47	.65
Dizziness or Fainting	.41	.46	.19
Depression	1.29	1.45	.70
Forgetfulness	.38	.45	.29
Crying	.89	.93	.48
Confusion	.56	.62	.34
Insomnia	.54	.69	.36
Weight Gain	.96	.96	.27
Swelling of Hands or Feet	.34	.42	.08
Breast Tenderness	.84	.85	.09
Abdominal Bloating	1.18	1.29	.14
MEAN - All Symptoms	.89	.99	.40

n = 142

Based on: None = 0
Mild = 1
Moderate = 2
Severe = 3

Table 8: Symptoms Listed in Order of Mean Symptom Severity Level in
the Week Before Period

SYMPTOM	MEAN SEVERITY LEVEL	
	Mean	Standard Deviation
Mood Swings	1.73	1.03
Irritability	1.50	1.02
Depression	1.29	1.06
Fatigue	1.27	1.07
Abdominal Bloating	1.18	1.12
Craving for Sweets	1.12	1.12
Increased Appetite	1.00	1.06
Headache	.99	1.05
Weight Gain	.96	.98
Nervous Tension	.90	.96
Anxiety	.90	1.01
Crying	.89	1.04
Breast Tenderness	.84	.99
Confusion	.56	.79
Insomnia	.54	.88
Dizziness or Fainting	.41	.75
Forgetfulness	.38	.72
Heart Pounding	.34	.66
Swelling of Hands or Feet	.34	.69

Based on: 0 = None
1 = Mild
2 = Moderate
3 = Severe

the period, seven of the symptoms were reported at a severity level of 1.0 or greater and four symptoms were reported at below the .50 level. During the menstrual period, eight of the symptoms were reported at 1.0 or greater severity level and only four symptoms were reported below the .50 level. For the rest of the month, none of the symptoms were reported at the greater than 1.0 level and only eight were reported at the .50 level or greater. The subjects in this study experienced greater symptom severity during the premenstruum and the menstruum then during the remainder.

The mean difference across phases is reported in Table 9 and the symptoms are listed in order of difference of severity from premenstrual to the rest of the month in Table 10. Eight of the symptoms show a mean difference of .50 or greater while six of the symptoms show a difference of less than .30. A histogram depicting the frequency of occurrence of symptoms versus severity level across phases is presented in Figure 6. It was found that the highest severity level was reported during the menstruum and the next highest during the premenstruum. The phase differences for each individual were computed, then the mean differences. The relationship between number and severity of symptoms reported and the phases of the menstrual cycle are addressed in the hypothesis. The computations and statistical analysis to support or reject the hypothesis are reported in the next paragraph.

Table 9: Mean Difference in Symptom Severity Across Cycle Phases

SYMPTOMS	DIFFERENCE		
	Week Before	During	Week Before
	Period - During Period	Period - Rest of Month	Period - Rest of Month
Nervous Tension	-.16	.51	.36
Mood Swings	0.0	.99	.99
Irritability	-.19	1.02	.85
Anxiety	-.05	.44	.38
Headache	-.15	.51	.37
Craving for Sweets	.06	.28	.34
Increased Appetite	.11	.53	.63
Heart Pounding	.05	.13	.18
Fatigue	-.22	.82	.61
Dizziness or Fainting	-.04	.27	.22
Depression	-.16	.78	.59
Forgetfulness	-.07	.14	.07
Crying	-.05	.45	.42
Confusion	-.06	.29	.23
Insomnia	-.15	.33	.18
Weight Gain	-.01	.71	.70
Swelling of Hands or Feet	-.07	.34	.26
Breast Tenderness	-.03	.77	.76
Abdominal Bloating	-.11	1.14	1.03
MEAN - All Symptoms	-.08	.58	.49

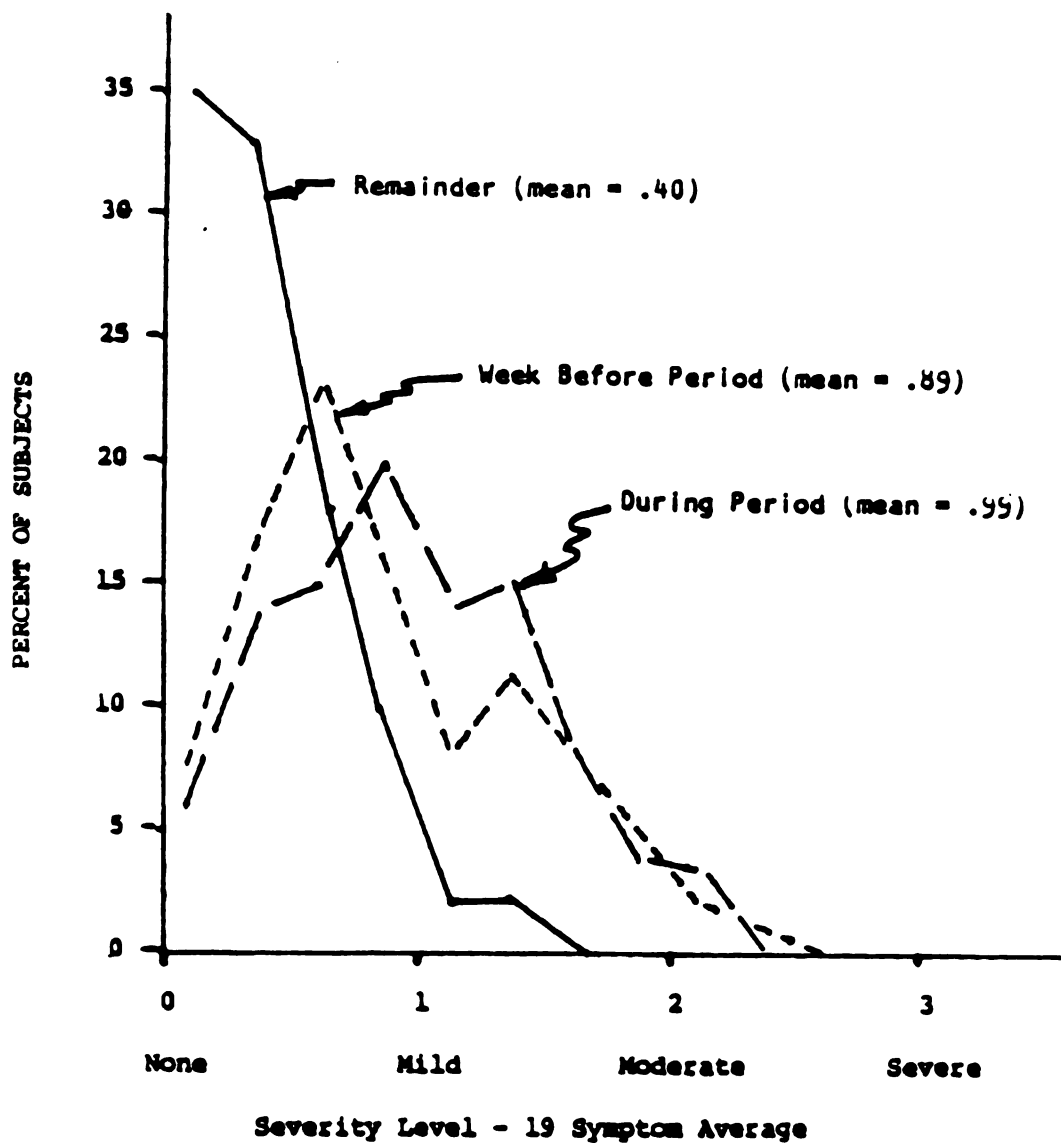
n = 142

Table 10: Symptoms Listed in Order of Mean Difference Across Phases
from Week Before Period to Rest of Month

SYMPTOM	DIFFERENCE IN SEVERITY LEVEL	
	Mean	Standard Deviation
Abdominal Bloating	1.03	1.06
Mood Swings	.99	1.05
Irritability	.85	.98
Breast Tenderness	.76	.98
Weight Gain	.70	.86
Increased Appetite	.63	1.08
Fatigue	.61	1.04
Depression	.59	.93
Crying	.42	.96
Anxiety	.38	.95
Headache	.37	.94
Nervous Tension	.36	.84
Craving for Sweets	.34	.94
Swelling of Hands or Feet	.26	.66
Confusion	.23	.61
Dizziness or Fainting	.22	.72
Heart Pounding	.18	.53
Insomnia	.18	.72
Forgetfulness	.07	.51

n = 142

Figure 6: Frequency of Occurrence versus Severity Level - 19 Symptom
Average Each of Three Phases



Hypothesis

The purpose of this study was to describe the symptoms reported by 15 to 18 year old girls during three phases of the menstrual cycle and to determine if there were significant cycle phase differences in the severity of symptoms reported. Two-tailed t-tests were performed on the mean differences in severity for each of the 19 items in the scale, for each of the three phase differences. Cycle phase variation was said to exist when there was a statistically significant difference ($p < .01$) between the mean severity levels of the symptoms across any of the cycle phases. The hypothesis was accepted or rejected based on the level of significance computed for cycle phase differences.

There is a relationship between the phases of the menstrual cycle and the severity of symptoms reported.

The results of the two-tailed t-tests on the mean differences in severity across cycle phases are presented in Table 11. The symptom severity was higher for the WEEK BEFORE PERIOD than the REST OF MONTH. The cycle phase differences for WEEK BEFORE PERIOD minus REST OF MONTH were found significant beyond the .01 level for all symptoms except forgetfulness (.096). The symptom severity was also found to be higher DURING PERIOD than the REST OF MONTH. The cycle phase differences for DURING PERIOD minus REST OF MONTH were found significant beyond the .01 level for all symptoms.

Table 11: t-Test Results on Significance of Mean difference in
Symptom Severity Across Phases

SYMPTOM	DIFFERENCE			DIFFERENCE			DIFFERENCE		
	Week Before Period			During Period			Week Before Period		
	t-Value	D.F.	Prob	t-Value	D.F.	Prob	t-Value	D.F.	Prob
Nervous Tension	-2.30	139	.023**	7.06	140	.000*	5.03	139	.000*
Mood Swings	0.00	138	1.000	12.24	140	.000*	11.07	138	.000*
Irritability	-1.94	138	.052	13.00	138	.000*	10.15	137	.000*
Anxiety	- .70	138	.488	6.01	139	.000*	4.73	137	.000*
Headache	-2.29	137	.024**	6.13	139	.000*	4.64	137	.000*
Craving for Sweets	.82	138	.416	3.67	139	.000*	4.30	139	.000*
Increased Appetite	1.38	137	.170	6.13	138	.000*	6.92	139	.000*
Heart Pounding	1.22	138	.224	3.09	138	.000*	4.01	138	.000*
Fatigue	-2.01	135	.006**	9.40	136	.000*	6.03	136	.000*
Dizziness or Fainting	-1.00	136	.319	4.22	134	.000*	3.59	136	.000*
Depression	-1.99	140	.049	9.90	137	.000*	7.54	137	.000*
Forgetfulness	-1.41	136	.161	3.11	137	.002**	1.60	136	.096
Crying	- .61	132	.540	6.02	131	.000*	5.20	138	.000*
Confusion	- .90	137	.327	5.05	135	.000*	4.40	137	.000*
Insomnia	-2.47	138	.015**	4.52	138	.000*	2.92	140	.004**
Weight Gain	- .11	138	.913	8.02	132	.000*	9.55	134	.000*
Swelling of Hands or Feet	-1.10	134	.273	5.09	131	.000*	4.69	136	.000*
Breast Tenderness	- .40	138	.694	9.72	136	.000*	9.05	136	.000*
Abdominal Bloating	-.170	140	.092	12.48	139	.000*	11.49	139	.000*
MEAN - All Symptoms	-2.24	111	.027**	14.02	100	.000*	11.20	115	.000*

D.F. = Degrees of Freedom
 Prob = Probability of Chance Occurrence
 * = Significant Beyond the .001 Level
 ** = Significant Beyond the .05 Level

Only one symptom, fatigue, had a significant difference for the phase difference WEEK BEFORE PERIOD minus DURING PERIOD. The t-value was -2.81 which was significant beyond the .006 level.

The mean of all 19 symptoms was computed giving a "mean of the mean" or general symptom level for each of the three cycle phases. The mean of the mean for each phase is; WEEK BEFORE PERIOD 0.89, DURING PERIOD 0.99, and REST OF MONTH 0.40. This is also reported in Table 7, and the difference across phases in Table 9. The two-tailed t-test on the mean symptom level was found significant in the positive direction beyond the .01 level for WEEK BEFORE PERIOD minus REST OF MONTH, thus symptom severity was higher the WEEK BEFORE PERIOD than the REST OF MONTH. The two-tailed t-test was found significant in the negative direction beyond the .05 level for WEEK BEFORE PERIOD minus DURING PERIOD, thus symptom severity was less for WEEK BEFORE PERIOD than DURING PERIOD.

Based on the significance levels reported, the hypothesis is accepted and refined to state:

There is a relationship between the phases of the menstrual cycle and the severity of symptoms reported by 15 to 18 year old girls. The symptoms were more severe in the premenstruum and the menstruum than in the remainder, with no difference between premenstruum and menstruum.

Additional Findings

In this study the relationships between the age of the subjects and the severity of each symptom in each of the three phases was computed using the Pearson product-moment correlation (see Table 12). For the week before the period, four of the items (weight gain, swelling of hands and feet, breast tenderness, abdominal bloating) showed a slight positive relationship with age. For during the period, three of the items (anxiety, weight gain, abdominal bloating) showed a slight positive correlation and three showed a slight negative correlation (irritability, depression, insomnia).

The relationship between the time since menarche and the severity of symptoms was also computed (see Table 13). The week before the period, five of the symptoms showed a slight correlation with length of time since menarche. During the period, only one symptom showed a slight negative correlation with time since menarche.

The correlations for these variables accounted for very little variance in the scale. It should be noted that the subjects in this study were young (mean age = 16.1) and there was relatively little age variability (S.D. = 1.0).

Summary

The results of the study are included in this chapter. The population for this study was 142 girls ranging in age from 15 to 18. Ninety-one percent were in good health and 75% missed five or

Table 12: Pearson Correlation of Symptom Severity versus Age

Positive numbers indicate increased symptom severity with age.

Negative numbers indicate decreased symptom severity with age.

SYMPTOMS	WEEK		
	BEFORE PERIOD	DURING PERIOD	REST OF MONTH
Nervous Tension	.090	-.039	.040
Mood Swings	-.020	-.108	.121
Irritability	.052	-.139*	.113
Anxiety	.023	.147*	.079
Headache	.012	-.065	-.137*
Craving Sweets	.125	-.104	-.042
Increased Appetite	.115	-.056	-.036
Heart Pounding	-.023	-.082	-.145*
Fatigue	.064	.065	.030
Dizziness or Fainting	-.119	-.111	-.147*
Depression	-.065	-.169*	-.027
Forgetfulness	-.046	-.053	-.046
Crying	.047	-.078	-.006
Confusion	-.049	-.054	-.075
Insomnia	-.058	-.144*	-.021
Weight Gain	.189**	.169*	-.119
Swelling of Hands or Feet	.140*	.117	-.072
Breast Tenderness	.157*	.108	-.044
Abdominal Bloating	.201**	.217**	.055
Mean - All Symptoms	.077	.001	.051

n = 142

* Relationship Significant @ .05 Level

**Relationship Significant @ .01 Level

**Table 13: Pearson Correlation of Symptom Severity Versus Time Since
Start of Period**

Positive numbers indicate increased symptom severity with length of time since start of menses.

Negative numbers indicate decreased symptom severity with length of time since start of menses.

SYMPTOMS	WEEK		
	BEFORE PERIOD	DURING PERIOD	REST OF MONTH
Nervous Tension	.063	.138	.195*
Mood Swings	.250**	.100	.195*
Irritability	.156*	.072	.210**
Anxiety	.055	.138	.094
Headache	.129	.013	-.022
Craving Sweets	.129	.069	.122
Increased Appetite	.003	-.136	-.032
Heart Pounding	.023	.049	.044
Fatigue	.144	.127	.072
Dizziness or Fainting	.009	-.065	-.094
Depression	.041	-.030	-.005
Forgetfulness	.020	.087	-.039
Crying	.107	-.132	-.018
Confusion	.047	.091	.036
Insomnia	-.092	-.163*	-.128
Weight Gain	.194*	.059	-.069
Swelling of Hands or Feet	.040	-.059	-.093
Breast Tenderness	.084	.058	-.006
Abdominal Bloating	.150*	.135	.018
Mean - All Symptoms	.159*	.031	.103

n = 142

*Relationship Significant @ .05 level

**Relationship Significant @ .01 level

less days of school. Thirty percent or more of the subjects reported eight of the symptoms at the moderate or severe level during the premenstrual week. Thirty percent or more reported 11 of the symptoms at the moderate or severe level during the menstrual week. The difference in symptom severity between WEEK BEFORE PERIOD and REST OF MONTH was found to be significant beyond the .01 level for 18 of the 19 symptoms. A significant difference was also shown DURING PERIOD and the REST OF MONTH beyond the .01 level for all 19 symptoms. The hypothesis was accepted. Only one of the symptoms showed a significant difference between the premenstruum and the menstruum. Additionally, there was a significant correlation between time since start of menses and severity of symptoms for four symptoms in the week before the start of the period. The correlation was statistically significant but not practically significant.

In Chapter VI, the summary and conclusions of the study are presented. Implications for nursing education and practice are discussed. Recommendations for further research are included.

CHAPTER VI

SUMMARY AND IMPLICATIONS

Overview

This study was designed to describe the reported presence, type and severity of symptoms (of PMS) experienced by 15 through 18 year old girls the week preceding their period, during their period and the remainder of the month. Included in this chapter are a summary and interpretation of the findings. Implications for nursing practice and education are explored and recommendations for further research are offered.

Description of Study Sample

The mean age of participants in this study was 16.1 (S.D. = 1.0) with a range from 15 to 18. All of the subjects were single, full-time high school students, the majority of whom were white (91%). Fifty percent reported they did not know family income. Of the remaining 50%, 25% reported an income of \$50,000 or more per year. No similar studies have been reported on this age population, however, several similar studies have reported on an older population. Woods, et al. (1980) studied perimenstrual symptoms on a group (n = 179) of women whose mean age was 27.7. Fifty-four percent of her participants were married, 67% were white and 33% were black. The income range for her subjects was \$2,000 to \$40,000 with a median of \$16,700 (Woods, et al., 1980). Moos (1968) using the same

instrument reported on a population of 839 women whose mean age was 25.2 years (S.D. = 3.9). Over half of his subjects were married. He did not report on the ethnic breakdown or income.

The health of the majority of the subjects in this study was reported as good or excellent with only 18% reporting any chronic health problems and most of these either asthma or allergies. This population also missed very few school days with the majority missing five or less days in the past year. Health status has not been reported on the populations of any comparable study. This population was specifically selected in an attempt to study a well population versus a potentially not well population, which might be found in subjects visiting a clinic or health provider's office. Abraham (1983) did report on two populations of older women (mean age 25, S.D. = 2.5 and mean age 32, S.D. = 8.6) who visited a family planning clinic and a gynecologists office but he did not describe their health. With the few exceptions, this is a healthy age and the health of subjects in this study is comparable to the health of an average adolescent population.

In this menstruating population, the average length of time since menarche was three years and six months (S.D. = 1 year 6 months) with the average length of menstrual cycle 29.5 days (S.D. = 6.7). The number of days the period lasts was 5.4 days (S.D. = 1.3). This is similar to the findings of Moos (1968) who reported an average cycle length of 30.3 days (S.D. = 4.7) and average length of flow as 5.5

days (S.D. = 2.0). Quantity of flow has not been reported by other investigators. The majority of this population described their flow as moderate.

Several investigators have differentiated between subjects on oral contraceptives and those not on oral contraceptives and correlated this with symptomatology (Moos, 1977; Woods, et al., 1980). Only four of the subjects in this study reported oral contraceptive use, therefore, this variable was not reported or correlated.

In summary, the subjects in this study are representative of a well population of middle to upper middle class high school girls. The typical girl in this study is 16.1 years old and has been menstruating for three years and six months. With 12.5 as the average of menarche for a white girl in the United States this population is typical (Kaluger & Kaluger, 1979).

Hypothesis

There is a relationship between the phases of the menstrual cycle and the severity of symptoms reported.

A statistically significant relationship was observed between the phases of the menstrual cycle and the severity of symptoms reported. Of the 19 items, 17 were found significant beyond the .001 level when comparing premenstruum to the remainder of the month. For the menstruum versus the remainder of the month, 18 of the symptoms were

found significant beyond the .001 level. In comparing the premenstruum to menstruum a statistically significant relationship was not observed.

Using the Moos (1968) instrument Woods, et al. (1980) reported similar findings. They found significant cycle ($p < .01$) phase differences between premenstruum versus remainder and menstruum versus remainder for 16 items of 47. However, they found statistically significant differences for only eight of the items for premenstruum versus menstruum and this difference was small (< 0.3).

In a study of 839 women, Moos (1968) reported similar findings. He reported that women complained of significantly more symptoms in the menstrual and premenstrual periods than they did in the remainder. However, he did not report the differences or compare premenstrual versus menstrual.

A careful review of studies reported in the last 30 years reveals a wide range in reports of incidence and severity of symptoms with little agreement as to how premenstrual or menstrual distress should be defined. Most studies report the incidence of symptoms for the premenstruum and the menstruum separately leaving the impression that they are two distinctly separate constructs (Abraham, 1983; Dalton, 1977; Frank, 1931; Greene & Dalton, 1953; Morton, et al., 1953).

The findings of this study suggest that there is a difference in severity of symptoms reported in the different phases of the menstrual cycle, however, they do not support the theory that PMS and dysmenorrhea are separate phenomena. Even though this theory was

not supported in this study, there is support in the literature for the separation of PMS and dysmenorrhea (Abraham, 1980, 1983; Dalton, 1972; Green & Dalton, 1953). There are several possible reasons why results of this study did not support this. First, the problem may be with the instrument. Abraham (1983) has suggested that the 19 items are symptoms which show the greatest change premenstrually to menstrually and do not encompass dysmenorrhea symptoms. However, prior to this study, there have not been any reports of empirical tests of the instrument to provide validation for his claims. Secondly, the age of the subjects may have influenced the results. Investigators have suggested that dysmenorrhea improves with age and parity and PMS gets worse (Abraham, 1980; Dalton, 1977; Greene & Dalton, 1953). The similarities in reporting symptoms premenstrually and menstrually could have been because this age group typically experiences symptoms in both phases. Additionally, this is a time of life when menses is a relatively new experience, one of many, and the subjects might not have developed an awareness of the relationship between their menstrual cycle and symptoms.

Descriptions of the Symptoms 15 to 18 Year Old Girls Report
During Three Phases of the Menstrual Cycle.

Question 1:

What symptoms are reported by 15 to 18 year old girls during the week before their period, during their period and the rest of the month?

Question 2:

How severe are the symptoms in the week before the period,
during the period and the rest of the month?

As was reported by numerous investigators a wide range of somatic and psychological symptoms are reported by women during the week before their periods (Abraham, 1983; Dalton, 1977; Greene & Dalton, 1953; Moos, 1968; Woods, et al., 1980). Eight of the symptoms are somatic and report physical changes. The first, weight gain was reported by 30% of the subjects in this study, a frequency comparable to Morton, et al. (1953), Moos (1968), Timonen and Procope (1971). Woods (1980) found 45.8% of her subjects reported premenstrual weight gain.

Swelling of extremities was reported by 53% of Timonen and Procop's (1971) subjects and 28% of Taylor's (1979). This is much greater than the 8% reported in this study. Breast tenderness was reported by 27% of this study and was reported at frequencies ranging from 18% to 45% by other investigators. (Moos, 1968; Morton, et al., 1953; Pennington, 1957; Woods, et al., 1982). Abdominal bloating in the premenstruum was reported by 35% of the subjects in this study. Other investigators have reported frequencies ranging 35% to 50% (Morton, et al., 1953; Moos, 1968; Woods, et al., 1980). Headache was reported by 29% of the subjects in this study which is similar to the findings of Moos (1968), Pennington (1957) and Woods, et al. (1980). Greene and Dalton (1953) and Morton, et al. (1953), found

this symptom in over 50 of their subjects. Fatigue was reported by 43% of the subjects in this study which it makes it comparable to the frequencies reported by Morton, et al. (1953) and Timonen and Procope (1971). Two of the somatic complaints (heart pounding and dizziness or faintness) were reported by 10% or less of the subjects in this study. Heart pounding was not reported in any other study and dizziness or fainting was reported by 27% in Morton, et al. (1953). In reviewing the somatic findings reported in this study and the other studies for the premenstruum, it is important to note that all but two of the symptoms were reported at the 30% or higher level in diverse populations of women over a span of 30 years.

Nine of the symptoms in this scale are affective or psychological. Of these, mood swing, irritability and depression were reported by more than 40% of the subjects during the premenstruum. These findings were comparable to the results reported by Moos (1968), Taylor (1979) and Woods, et al. (1980). Anxiety, crying and nervous tension were reported by over 25% of this population, which again is similar to the frequency reported by other investigators. Items forgetfulness, confusion and insomnia were reported by 15% or less of the subjects in this study and were not reported in other studies. Craving for sweets and increased appetite were reported by over 30% in this study and at comparable frequencies by Morton et al (1953). In reviewing the psychological symptoms reported in this study and in other populations, it is noted that there is a greater diversity in the frequencies than occurred with the somatic complaints, the range being from 8% to 63%.

In reviewing the results of this study, several important conclusions are suggested. The average subject of this study has symptoms during two phases of the menstrual cycle; the premenstruum and the menstruum. However, for this average subject these symptoms are generally experienced as mild to moderate. The girl experiencing symptoms at this level is not likely to find they interfere with her life. This girl is likely to be aware of the symptoms but not debilitated by them. However, in this same group of subjects, 30% or more report symptoms at the moderate to severe level in the premenstruum and menstruum. It could be anticipated that this group might find the symptoms interfering with their lives. Symptoms including nervous tension, mood swings, irritability, anxiety and depression could have a negative affect on relationships, school performance and self-esteem; all important areas at this time of life. Additionally, fatigue and headaches could interfere with performance in several areas and contribute to absence from school or jobs. The group reporting moderate to severe symptoms is likely to be uncomfortable and/or debilitated during some portion of each month.

Conclusions

The results of this study have confirmed the existence of cycle phase differences for all but one of the 19 items. These differences have occurred between the week before the period versus the rest of the month and during the period versus rest of the month, but did not

occur for premenstruum versus menstruum. The existence of PMS and dysmenorrhea as separate constructs have not been confirmed in this study. While this has not been confirmed it is important to note a diversity of symptoms are reported in both phases by a presumably well population of girls. The presence of these symptoms in the premenstrual phase and the absence or decrease in symptom severity during the menstruum or the rest of the month has been considered diagnostic of PMS by numerous clinicians and researchers (Abraham, 1980, 1983; Dalton, 1977; Harrison, 1982; Lark, 1984; Lauersen, 1985; Lauersen & Graves, 1983; Lauersen & Stukane, 1983; Norris, 1983; Norris & Sullivan, 1983). It is also important to note that 30% or more of this population report eight to 11 symptoms at the moderate to severe level during the premenstruum and the menstruum. These findings have many implications for advanced nursing practice, nursing education and research. The work of other researchers is enhanced by this study (Abraham, 1983; Woods, et al., 1980). These will be discussed in the following sections.

Nursing Implications for Practice

The implications for advanced nursing practice will be presented from the perspective of the Clinical Nurse Specialist (CNS) in the primary care setting. The characteristics of this role are multiple and often overlapping. As they are described within the context of this chapter they will be underlined for clarification.

The Clinical Nurse Specialist bases her/his practice on nursing theory and appropriate theories from other disciplines. The nursing theory deemed most applicable to this study is the theory of Martha

Rogers. PMS is a womens health issue and as such it needs to be viewed in the context of a conceptual framework that places it in the life cycle of the woman. The framework of Martha Rogers (1970) provides a context that is particularly appropriate to this syndrome. Rogers views health and illness as an expression of the life process and a response to the human and environmental field. In Rogers' framework, the girl with PMS is within this environmental field and in constant interaction with it. Rogers views the goal of nursing as promotion of interaction between people and their environment to direct and redirect for maximum health potential or harmony. To achieve this goal for the girl with PMS, the CNS would work with the girl to help her repattern her environment. Additionally, the CNS would use her/his professional skills to repattern the global environment.

The evolutionary nature of Rogers' framework also makes it particularly appropriate for the nurse who works with the adolescent. It is consistent with many developmental theories for example, Erikson's psychosocial stages of development and Havighurst's (1972) developmental tasks depict a philosophy of a life process evolving irreversibly and unidirectionally. (Falco and Lobo, 1980)

From the perspective of Rogers' framework, PMS can be viewed as a discordant variation in the pattern of the menstrual cycle. The menstrual cycle is part of a larger pattern in the life process of women. In considering nursing intervention to repattern and bring

harmony into this portion of the menstrual experience, it is appropriate to intervene at the time of menarche or before. The appropriateness of intervention at this time is supported in the literature. Gander and Gardiner (1981) suggest that "a girls attitude toward this natural process is greatly influenced by how well she understands it" (p. 384). Norris and Sullivan (1983) have suggested that symptoms of PMS may be considered part of the tumult of adolescence and not recognized by the girl, her parents, or the provider. This fact was borne out in the conduct of this research, when several of the subjects who participated in the pretests of the instrument expressed relief at learning that they were not either "crazy " or "just mean."

In providing care to this adolescent population it is essential to be cognizant of the developmental tasks of this age group and their health practices. Considerations in delivering health services to this population are the realization that this is not a population who routinely seek health care. In the absence of chronic illness this age group does not have regular contact with the health care system. Adolescent concerns are short-term or crisis type--pregnancy tests, tests for sexually transmitted diseases, sports injuries or physicals, and birth control information (Allen-Lia, 1981; Dennis and Hassol, 1983). This intermittent and short term contact with the system mandates a creative approach in reaching this population. It is essential to go outside of the traditional health care system to reach this population. Junior high school health classes are an

appropriate place to begin providing anticipatory guidance. In addition to information about the menstrual cycle, girls could be encouraged to become more aware of themselves and the patterns of their lives. This learning process could be facilitated through journal keeping. This age group is inclined to self-involvement and could learn about their own particular menstrual pattern by keeping a record of their periods. Additionally, the students could record physical and emotional fluctuations, food intake, stressors and exercise. This journal exercise could be incorporated into the health portion of the physical education curriculum.

High school health classes are appropriate for continuing guidance as the girl continues the life process. By this time the girl is less dependent on parents and makes more autonomous decisions. Information about the impact of nutrition, particularly, caffeine, refined carbohydrates, high sodium content, and snack foods would give the girl a knowledge base to make choices that could improve her overall health and decrease symptoms of PMS.

In her role as consultant the Clinical Nurse Specialist can provide expertise to the school system curriculum committee and the teaching faculty. She can educate them about the normal menstrual cycle and the variation (PMS) which may occur in their students and suggest methods of incorporating this information into the curriculum.

In addition to the school system, this population can be reached through the media, and in particular through the magazines which are read by girls this age. As an educator, the Clinical Nurse Specialist can submit informative, accurate articles to lay publications such as "Seventeen." For example, the information found in this study could be summarized in a popular format and submitted to popular magazines as a way of reaching a large population.

Another method of reaching this population is through the parents, especially the mothers. Mothers could be reached when they come into the health care system for an annual or bi-annual Pap smear and pelvic exam. At this time the CNS or health care provider could obtain information about ages of children. The mother could be given pamphlets about the adolescent girl and encouraged to bring this girl into the health care system for assessment and guidance. Mothers could also be reached through womens magazines. Articles in these magazines could alert the mother to the possibility of PMS as a contributing factor in the behavior patterns of adolescent girls.

The prerequisites for a primary care setting that is providing care to adolescents are trust, treatment of the whole person, education, and involvement (Dennis and Hassol, 1983). In developing a trusting relationship with the adolescent girl it is essential for the provider to remember that the girl is the patient, not the parent. As the adolescent grows toward maturity she needs to understand her body and her emotions and realize what her choices are

in caring for her body and controlling her emotions. This knowledge gives her the tools she needs to move toward increased independence from parents and other adults.

The CNS practicing as a member of an interdisciplinary health care team has numerous opportunities to consult and collaborate with providers from other disciplines. With her knowledge of PMS she can educate the other providers and collaborate in developing protocols for the assessment and treatment of adolescent girls with PMS. As a client advocate and charge agent, the CNS can impact the system so that it is structured or restructured to meet the needs of this specific population. While the nurse in advanced practice may be either a man or woman, it is suggested that consideration be given to the discomfort the adolescent girl might experience in talking to a man about menstruation and PMS. In light of this, it is recommended that every effort be made to schedule the girl's appointments with a woman provider if the girl expresses a preference for this. Based on knowledge of adolescent development, it is assumed that this will be the girl's preference, therefore, nursing interventions will be presented from this perspective.

To structure nursing intervention that is most helpful it is appropriate to begin with assessment. Every adolescent girl should have an assessment of her menstrual status as part of a regular health assessment. If the girl is menstruating then a further assessment should be done. The instrument used for this study (MSQ) can be used as the assessment tool. This assessment serves several

purposes. It gives the girl and the provider a picture of the type and severity of symptoms experienced, it provides the girl with the opportunity to talk about her symptoms, and it provides direction for further intervention.

If a problem is identified when reviewing this tool or in conversation with the girl, more detailed information on the duration and pattern of symptoms could be obtained. This could be assessed by having the girl keep Abraham's Menstrual Symptoms Diary (MSD) for two or three cycles (Abraham, 1983). The MSD contains the same symptoms as the MSQ but is reported daily for the duration of a cycle. This tool is particularly useful because tested treatment protocols have been developed based on the type of symptoms reported (Abraham, 1983, Harrison, 1982; Lark, 1984; Lauersen, 1985; Lauersen & Graves, 1983; Lauersen & Stukane, 1983).

In addition to a complete picture of the girl's symptoms it is necessary to assess the environmental factors which might be influencing the type and severity of symptoms. While there is no single agreed upon etiology of PMS, numerous factors have been suggested as influencing the type and severity of symptoms experienced. Factors most frequently suggested are diet, including inadequate intake of vitamins and minerals, caffeine, high intake of refined sugars, chocolate, alcohol, high sodium intake, and low intake of whole grains, fruits and vegetables. Additional factors include lack of exercise and stress (Abraham, 1983; Harrison, 1982; Lark, 1984; Lauersen, 1985; Lauersen and Graves, 1983; Lauersen and

Stukane, 1983). The initial assessment phase is complete when all facts and opinions about the individual and environment are collected (Falco and Tobo, 1980).

It is inherent in Rogers' framework that the nurse is working with the client, not to or for the client. Following the data collection all the information is reviewed by the CNS and the client. In the adolescent girl with PMS symptoms would be evaluated for pattern and severity and environmental factors would be reviewed for identifiable patterns. Each of the significant environmental factors would be reviewed from the perspective of its impact on the individual. As a result of this assessment a conclusion is drawn about the individual. This is the nursing diagnosis.

The purpose of the nursing diagnosis is to provide a framework within which nursing intervention is planned and implemented. The diagnosis adapted for this study is from Campbell (1978). While Campbell bases her diagnosis on Maslow rather than Rogers, the two frameworks are philosophically compatible. Maslow believes that once basic needs are met human beings can move forward to meet needs on a higher level (Maslow, 1954). Rogers believes that man is characterized by pattern and organization and that exchange with the environment influences the pattern and organization. She believes within this pattern human beings move toward increased complexity (Rogers, 1970).

One possible nursing diagnosis for an adolescent girl with PMS is:

Inadequate Information Related to Premenstrual Tension.

The inadequate information can be grouped into three general categories:

1. Inadequate information regarding the signs and symptoms of PMS.
2. Inadequate information regarding the environmental factors influencing its occurrence.
3. Inadequate information regarding general health practices recommended to decrease disharmony and increase maximum health potential.

The next step in the nursing process is the goal or the aim of the nursing intervention. Rogers (1970, pg. 86) states, "Nursing aims to assist people in achieving their maximum health potential." She further declares the goal of nursing is to promote a symphonic interaction or harmony between man and his environment. For the girl experiencing PMS the goals would be to:

1. Increase understanding of the relationship between phases of the menstrual cycle and symptoms experienced.
2. Able to identify environmental components which can potentially increase number and severity of symptoms of PMS.
3. Able to alter the environment to decrease or eliminate the symptoms of PMS and bring harmony to the menstrual experience.
4. Increased acceptance of her physique and the functioning of her body.

These goals will be implemented by nursing interventions. The first intervention is the nurse herself. As a component of the girls environment, as an adult woman in a professional role the nurse is a role model. In her relationship with the adolescent girl the nurse serves as a model of a woman who has achieved a career and has learned to repattern her own life in a way that allows this achievement. This kind of modeling helps the girl accept herself. Additional interventions for this client would include:

1. Listening to the girl's verbal and nonverbal messages.
2. Providing information about the menstrual cycle and PMS.
3. Providing information about environmental factors which are thought to influence PMS.

Diet

Exercise

Stress

Sleep patterns

4. Providing information about additional health practices postulated to relieve PMS

Yoga

Relaxation techniques

Imagery

Acupressure massage

Massage of the Neurolymphatic and Neurvascular holding points

Therapeutic touch

Support groups

Medication

5. Reinforcement of a positive self image through a positive accepting relationship between the CNS and the client through the modeling of the CNS.

The final phase of the nursing process is evaluation. Have the interventions moved the girl toward her maximum health potential? Expected outcomes would be used as the basis for answering this question. These include:

1. The client was able to keep a diary for two menstrual cycles.
2. The client was able to identify (if present) relationship between symptoms and phases of the menstrual cycle.
3. The client was able to identify environmental components which might be contributing to symptoms experienced.
4. The client was able to alter these components or identify obstacles to altering them.
5. Client was able to identify sources of help in eliminating obstacles (e.g. provider, parent).
6. Client reported decrease or alleviation of symptoms.
7. Client verbalized increased acceptance of her physique and body functioning.

Each girl seen by the clinical nurse specialist needs to be evaluated on an individual basis and each treatment plan needs to be developed with the individual girl. And last and perhaps most essential the CNS needs to be aware that she/he may be the most

important component of the girl's environment. As Carl Rogers (1961) states, "The warm, subjective encounter of two persons is more effective in facilitating change than is the most precise set of techniques growing out of learning theory or operant conditioning" (p. 93).

Nursing Implications for Education

In this study a health need of this middle adolescent population (PMS) has been identified and the nurse, particularly the nurse in advanced practice, has been suggested as the appropriate professional to provide assistance to the client. While the provider of choice may be the CNS, it is very likely that the adolescent girls contact with the health care system may be through an agency where CNS are not practicing. This possibility mandates education for nurses at both the baccalaureate and graduate level. College of Nursing curriculum committee need to take note of PMS and include it in their courses.

I would suggest that on the undergraduate level this can be done by having the students (both men and women) keep a diary for a three month period. Information collected would include a Menstrual Symptom Diary (for men a symptoms diary), a dietary record, a sleep record, stressful events and exercise. Analysis of this record would give the student greater insight into themselves and their own life patterns and greater insight into the clients they will be serving.

On the graduate level it is essential to incorporate information on the normal menstrual cycle and variations of this in the curriculum. Womens information on assessment and treatment of PMS would provide the nurse going into advanced practice with valuable tools in serving the health needs of adolescent girls and adult women.

Graduate students who were planning on specializing in the area of womens health, adult or family health would need indepth information. This should include information on diagnostic criteria, available assessment tools, postulated etiology and treatment regimens. Additionally, this nurse would need knowledge of nursing theory to provide a base and direction for practice, understanding of the extent and limitations of the CNS role and thorough knowledge of the health care sytem. The nurse in advanced practice has a particular responsibility to act as a client advocate and change agent to help pattern and repattern the health care system to meet the health needs of the population.

Summary

In summary the purpose of this study was to describe the type and severity of symptoms reported by 15 to 18 year olds during the phases of the menstrual cycle. It was found that the girls experience a diversity of symptoms which increased in number and severity during the premenstruum and the menstruum. This has implications for the clinical nurse specialist in the primary care setting and for all

nurses who provide care for this population. Additionally, this has implications for nursing education at the undergraduate and graduate levels. The nursing goal with this population is to help them achieve harmony in their menstrual experience. This goal is achieved through the framework of the nursing process.

This study has provided information that contributes to the knowledge base of nursing. Therefore the nurse caring for the adolescent girl with PMS can base nursing practice on sound theory. Again it is important to stress that from the perspective of Rogers' theory, PMS is a variation in the menstrual pattern and component of the life process of women. As such, it needs to be viewed from Rogers' conceptual framework that views the wholeness of the person. This places the clinical nurse specialist in a unique position to provide care to girls and women experiencing menstrual disharmony.

Implications for Further Nursing Research

There are several implications for further research derived from this study. There are described below.

1. Replicate the present study in the same age group with a more diverse population economically, culturally, and ethnically.
2. Revise the MSQ by adding blank spaces for subjects to list additional symptoms.
3. Using the same symptoms, ask for the following additional information: How often did you experience the symptom in the past month? How long did the symptom last?

4. To further evaluate the instrument (MSQ) administered it to a group of subjects who then keep a Menstrual Symptoms Diary (MSD) for a two month period. Results from the two instruments should be compared.
5. The MSD should be kept for two months along with a diet record. The symptoms reported should be compared with nutritional intake to see if there is a correlation.
6. The MSQ and the Moos instrument should be administered to the same population so results could be compared.
7. A comparison study on mothers and daughters could be done by administering the same instrument to a mother-daughter population and comparing symptom severity of the mother-daughter dyads.
8. This same group could also be surveyed regarding their attitudes about menstruation and these could be compared to the results of the MSQ.
9. Conduct an experimental study. Give a pretest (MSQ). Do nursing interventions (e.g., teach dietary changes, stress reduction techniques, exercise group, support group.) Give a posttest to identify reported changes in symptoms.
10. Administer the MSQ and interview the girls regarding their attitudes toward menstruation and/or being a woman. Look for correlations. Do the same with mothers and compare the results.
11. Administer the MSQ and also ask the girls how they were prepared for menstruation and/or what their first menstrual experience was like.

12. Longitudinal studies need to be done on a large population of girls beginning prior to menarche to describe the menstrual experience over a significant portion of the life cycle.

Summary

In Chapter VI a summary and interpretation of research findings in relation to the hypothesis and questions was discussed. Thirty percent of the subjects were found to report eight to 11 symptoms at the moderate to severe level during the premenstruum and the menstruum. The possible impact of this on the subjects suggested a need for nursing intervention. Implications for nursing practice, education and research were discussed based on these findings.

APPENDIX A
Letters of Consent

May 13, 1985

Letters of Consent

Dear Parents,

I am a graduate student in the nursing masters program at Michigan State University. To complete the requirements for my degree I will be conducting a survey at Lansing Catholic Central on Friday, May 17th during the homeroom period.

I would like to have your daughter participate by filling out a questionnaire. The questionnaire will take about 20 minutes to complete. It will be completely anonymous and will not include the girl's name. The girls will not be identified or recognizable when the results of this study are reported. The questionnaire will ask for the following background information: age, grade, ethnic background and approximate income, chronic illnesses and medication. Additionally, it will include a list of symptoms (e.g. headache, fatigue, weight gain and ask the girl to check if and when she experiences them during a one month period of time.

Permission to conduct this survey has been obtained from the Principal, Mr. James Miner and from Associate Superintendent for Schools, Dr. Dorita Wotiska, O.P. Your consent is necessary for your daughter to participate. If you are willing to have her participate please sign the form below and return to the school promptly. Your daughter's participation in this study is completely voluntary and she may withdraw at any time without penalty.

Thank you for your cooperation. If you have any questions please contact me at the number listed below or contact Mr. Miner at Lansing Catholic Central.

Sincerely,

Margaret Kingsbury
Margaret Kingsbury
Clinical Nurse Specialist,
Graduate Student, MSU
517-394-2054

My daughter may participate in the research project.

Signature of Parent or Legal Guardian

Student Consent

Dear Student

I am conducting this survey to complete the requirements for my masters degree in nursing. I appreciate your willingness to participate in this study. If you have any questions please feel free to ask me. Please do not put your name on the questionnaire. All questionnaires are anonymous and confidential. Please complete the consent form and the questionnaire and return it to me.

Thank you for your time and cooperation.

Margaret Kingsbury,
Clinical Nurse Specialist,
Graduate Student
(517) 394-2054

I voluntarily consent to participate in this research study. I have had the opportunity to ask questions.

Signature of Subject

Date

Margaret R. Kingsbury
Signature of Investigator

5/17/85
Date

APPENDIX B

Approval Letter

APPENDIX B

Approval Letter

Office of Catholic Education, Diocese of Lansing

228 NORTH WALNUT • LANSING, MICHIGAN 48933

May 7, 1985

Mrs. Margaret R. Kingsbury
3333 Brisbane
Lansing, Michigan 48910

Dear Margaret,

I have read your Research Proposal "A Determination of the Relationship Between the Phases of the Menstrual Cycle and the Type of Severity of Symptoms Reported" thoroughly and find no objection to conducting your research at Lansing Catholic Central High School.

The decision to participate or not participate in the project is entirely at the discretion of the local principal, Mr. James Miner. He remains autonomous in his decision even though I endorse the project. From your letter and our phone conversations, it is clear that you do understand this and that you are prepared to obtain the permission of Mr. Miner, the teacher/s involved and parents of the girls who will participate.

I wish you every success and would appreciate a copy of the study, when it is available.

Sincerely


Dr. Dorita Woziska, O.P.
Associate Superintendent for Schools

DDW:nld

APPENDIX C
Human Subject Approval

APPENDIX C

Human Subject Approval
MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
218 ADMINISTRATION BUILDING
(517) 487-2186

EAST LANSING - MICHIGAN - 48824

May 21, 1985

Ms. Margaret R. Kingsbury
3333 Brisbane
Lansing, Michigan 48910

Dear Ms. Kingsbury:

Subject: Proposal Entitled, "A Determination of the Relationship
Between the Phases of the Menstrual Cycle and the Type
of Severity of Symptoms Reported"

I am pleased to advise that I concur with your evaluation that this project is exempt from full UCRIHS review, and approval is herewith granted for conduct of the project.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to May 21, 1986.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to my attention. If I can be of any future help, please do not hesitate to let me know.

Sincerely,



Henry E. Bredeck
Chairman, UCRIHS

HEB/jms

cc: Dr. Barbara Given

APPENDIX D

Instrument

APPENDIX D

Instrument

(1-3) I.D. _____
 (4) Card _____
 (5-10) Date _____

Your participation in this project is voluntary and you may withdraw at any time without penalty. If you do not wish to answer a question you may leave it blank. Please do not put your name on this survey.

DEMOGRAPHIC DATA

Please fill in each section of this form. If you have any questions please raise your hand.

(11-12) Age _____ (13-14) Grade in school _____

(15) Racial or ethnic background (please check one)

_____ White	_____ Hispanic
_____ Black	_____ Oriental
_____ American Indian	_____ Other (specify)

(16) Range of family income last year (please check one)

Less than \$10,000 _____
 \$10,000 to 19,999 _____
 \$20,000 to 29,999 _____
 \$30,000 to 39,999 _____
 \$40,000 to 49,999 _____
 \$50,000 or more _____
 Don't know _____

(17) How would you describe your health? Please check one.

_____ Excellent _____ Good _____ Fair _____ Poor

(18-19) Approximately how many days did you miss from school this year for health reasons? _____

(20-24) Please list any chronic illnesses? (For example: diabetes, asthma, epilepsy)

(25-29) Please list any medications you are on, either over the counter or prescription?

(30-33) When was your very first menstrual period?

Month and year _____

(34-35) How frequently do your periods come?

Every _____ days

(36-37) How many days do your periods last? _____

(38) Describe your usual menstrual flow:

Light _____ Moderate _____ Heavy _____

(39-42) Date of your most recent period (date it started):

Month _____ Day _____

(47-49) I.D. _____

(50) Card # _____

QUESTIONNAIRE

Do you have any of these symptoms during the week before your menstrual period, during your menstrual period or the rest of the month? Check one blank for each symptom you have during the week before your period, during your period or the rest of the month. Please put one check for each symptom for each time period under the correct heading.

SYMPTOMS	WEEK BEFORE PERIOD			DURING PERIOD			REST OF MONTH		
	(51)	None Mild	Moderate Severe	(70)	None Mild	Moderate Severe	(89)	None Mild	Moderate Severe
Nervous Tension	_____	_____	_____	(70)	_____	_____	(89)	_____	_____
Mood Swings	(52)	_____	_____	(71)	_____	_____	(90)	_____	_____
Irritability	(53)	_____	_____	(72)	_____	_____	(91)	_____	_____
Anxiety	(54)	_____	_____	(73)	_____	_____	(92)	_____	_____
Headache	(55)	_____	_____	(74)	_____	_____	(93)	_____	_____
Craving for Sweets	(56)	_____	_____	(75)	_____	_____	(94)	_____	_____
Increased Appetite	(57)	_____	_____	(76)	_____	_____	(95)	_____	_____
Heart Pounding	(58)	_____	_____	(77)	_____	_____	(96)	_____	_____
Fatigue	(59)	_____	_____	(78)	_____	_____	(97)	_____	_____
Dizziness or									
Fainting	(60)	_____	_____	(79)	_____	_____	(98)	_____	_____
Depression	(61)	_____	_____	(80)	_____	_____	(99)	_____	_____
Forgetfulness	(62)	_____	_____	(81)	_____	_____	(100)	_____	_____
Crying	(63)	_____	_____	(82)	_____	_____	(101)	_____	_____
Confusion	(64)	_____	_____	(83)	_____	_____	(102)	_____	_____
Insomnia	(65)	_____	_____	(84)	_____	_____	(103)	_____	_____
Weight Gain	(66)	_____	_____	(85)	_____	_____	(104)	_____	_____
Swelling of									
Hands or Feet	(67)	_____	_____	(86)	_____	_____	(105)	_____	_____
Breast Tenderness	(68)	_____	_____	(87)	_____	_____	(106)	_____	_____
Abdominal Bloating	(69)	_____	_____	(88)	_____	_____	(107)	_____	_____

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